Volume 89 Number 15

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

HAVING reduced dividends, salaries, wages and personnel without encountering anything more serious than an air of resignation, steel strengthens its pretension as a well-disciplined industry. True, at Pittsburgh some remnants of 1919 steel strike agitators are attempting (Page 18) to foment trouble, but a conflagration is not indicated. On the theory the depression will persist until public confidence in buying is restored, steel has set its house in order. Of the four major outlets for steel, a large part of the motor industry has taken its cue from steel, but the pipe industry is so dispersed as to make group action difficult, while the building industry and the railroads—leader and runner-up in steel consumption in 1930—are static.

Hoover for Lower Freight Rates in 1922

In various cities attempts are being made to persuade the building trades to synchronize their rates with the declining cost of living, but with indifferent success. . . . What is done with railroad wages may largely turn upon the interstate commerce commission's decision in the 15 per cent rate case. The historically-minded, incidentally, have excavated the record of Herbert Hoover as secretary of commerce and disclosed (Page 21) that in 1922 he urged the commission to reduce freight rates on primary commodities. . . . The railroad brotherhoods, edging toward a shorter work day and week, are formulating (Page 18) a policy with which to descend upon congress, perhaps to forestall their employers.

Facts, Not Glamor, Determine Wages

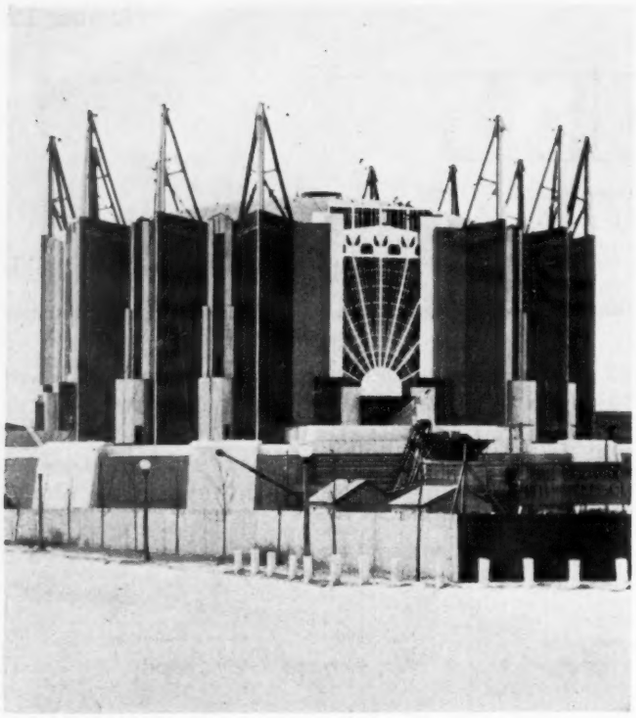
For the railroads to attempt to reduce wages would precipitate 1400 mediation cases (Page 19), it is claimed, but almost as painstaking and involved is the analysis made by one steelmaker (Page 17) to eliminate inequalities in compensation. Each task has been evaluated, the incidence of labor-saving machinery upon physical effort considered, and a scientific, equitable system of 22 zones for labor, each with a definite relation to a base, set up.

Isolated Price Weakness Develops

Insufficient time has elapsed to determine the actual effect of the 10 per cent wage reduction upon steel prices (Page 57) but in isolated instances—tin plate, rivets, cold-rolled strip and some stainless steel—soft spots have developed. . . . Last week steelmaking operations held

Wide World Photo

Sydney, Australia, harbor bridge as it finally appears, complete. This "greatest achievement of British bridge builders" is 3770 feet long, including approaches, and required 50,000 tons of steel



Suspension bridge principle appropriate for Travel and Transportation building, for Chicago's 1933 World's fair. The dome, 125 x 200 feet, is suspended by cables, affording the largest unobstructed area under a roof

closely to 29 per cent (Page 64), with indications of a fractional improvement this week. . . . September set a new low in pig iron production (Page 21) for the depression period when the daily rate declined to 38,821 tons, but for the first time since April there was a gain in steelworks stacks in blast.

Public Works Proceed as Private Jobs Lag

While the unadjusted building trade situation has discouraged private projects, public works —perhaps stimulated by Washington—have practically filled the void. In September, orders for structural steel averaged 62,558 tons weekly (Page 19), second only to the record of 64,860 tons per week last March. Nineteen awards in September, each for 1000 tons or more, were almost exclusively bridges, viaducts, courthouses, postoffices or other structures publicly financed.

Record Bridge Marks Roebling Centenary

Of all the public works under way or being completed, none can approach the stature of the George Washington bridge (Page 20), which after Oct. 24 will connect uptown New York with Fort Lee, N. J. Largest of suspension bridges—the main span of 3500 feet being more than twice that of Brooklyn bridge—it aptly commemorates the one hundredth anniversary of the arrival in this country of John A. Roebling, father of suspension bridges. . . . Still another feat in bridge construction is that of workmen of the Phoenix Bridge Co. who at Philadelphia recently (Page 18) erected 1000 tons of bridge steel in one day with the assistance of only one crane.

Business Goes Up as Money Goes Down

From a highly-technical issue for financial experts, suspension of the gold standard in Great Britain and certain other European nations is emerging as a practical matter impinging upon world trade. . . . A depreciated currency in Britain is stimulating the steel markets, especially the raw materials (Page 84), with producers beginning to advance their prices. . . . If a quickening in Britain looses a flood of low-price commodities the tariff may have to be raised, is the view at Washington (Page 19), so the tariff commission and treasury department are inaugurating a study to present to congress. . . . Russia, not distressed by a gold standard, warns (Page 77) that only more generous credit terms will revive Russo-American trade.

Airship Will Submit to Locomotive

Lighter metals may supply buoyancy to the new navy airship AKRON, but it requires steel to bring her to earth. Docking facilities at the Lakehurst, N. J., air station are being augmented by a special locomotive (Page 43) weighing 132 tons, exerting a drawbar pull of 30 tons. . . . Currents that impede the AKRON will only accelerate masts of experimental rotors being constructed (Page 38) by six eastern utility companies for generating electricity. A wind of 6 miles will operate the rotors, each having a capacity of 1000 kilowatts in a 28-mile wind. . . . A Cincinnati jobbing galvanizer has found automatic temperature control equipment (Page 39) reducing dross formation and increasing pot life.

From Car to Storage, Only 2 Cents

Two cents a ton is all it now costs a Detroit automobile manufacturer (Page 31) to move steel sheets from freight car to storage, as a result of a synchronized system and two types of mobile equipment. This compares with 14 cents a ton under what had previously been deemed a low-cost system. . . . When automobile and other users of steel receive faulty material the blame usually is a misunderstanding of specification which co-operation and research (Page 36) will tend to eliminate.

Adjust Wages To Conform With Modern Mill Conditions

WAGE equalization plan announced Sept. 29 by the American Rolling Mill Co., effective Oct. 4 in all its plants, represents a scientific research in the realm of personnel engineering that in many ways is as important as some of the modern developments in technological phases of steelmaking.

In one sweeping step the Middletown, O., company is casting aside, as it would obsolete equipment, the incongruities that have gradually crept into its wage scales since it first began to employ steel mill labor 31 years ago.

Introduction of modern expensive and intricate equipment has created new responsibilities in many departments. Simultaneously, the glamor and hardship of many an old-time mill-worker's position have faded into a sinecure, with tradition alone sustaining the rate established years ago. It was found that in several plants, acquired since the founding of the company, varying rates were being paid for virtually the same service.

Every Job Studied

With 25 to 30 per cent of its total expenditures applying to hourly wages, the necessity for equitable readjustments of wage scales suggested the initiation of compensation studies in 1929. This work progressed steadily during the past two years and was completed a few weeks ago.

In starting its studies the company first made an analysis of the cost of living in the communities in which its plants are located. Discovery that the variation in this factor did not exceed 1 per cent made it possible to discard the idea of setting up compensating factors to adjust to local living costs. Its next step was to examine the competitive conditions within the industry in each community. This study showed it would be possible to pay the same rate in each mill area without conflicting with the rate current in competitors' plants.

With these basic facts, the personnel investigators scrutinized each and every individual job, starting with the open-hearth departments. Many comparable positions with different rates were discovered. In many instances, it was discovered that the character of the job had been materially changed since the base rate was established.

For each position, a job description was prepared. These were compiled without reference to compensation rates, and no scoring system was used to evaluate the jobs. Descriptions then were analyzed to show the degree of responsibility required in each for the care of equipment and product, previous training and experience, and the amount of physical stamina necessary.

Series of Zones Evolved

These preliminary job descriptions were submitted to superintendents in each plant for classifications, and gradually a series of zones was evolved. Eighteen zones, it was found, embraced practically all classes of labor above the common labor level. In conference, department managers were asked to reconcile differences in their plants with the tentative classification of 18 zones. Finally, all positions were fitted into the classification plan.

The work thus accomplished was next viewed as a whole and common denominators developed for similar jobs in different departments. Then the task of setting up wage scales for each zone was undertaken, each zone being viewed in the light of similar jobs or classifications in the steel industry at large. Striking an average of all the jobs in each zone, it was discovered that there was no uniform differential in the wages paid in individual plants, although a natural progression upward from zone to zone was apparent, particularly in the first 14 zones.

In the four upper brackets which included the higher paid workers, rate increases from step to step were quite marked, and in numerous cases showed rates unwarranted by service requirements. Studies of these four upper zones indicated the desirability of adding four new zones, thus bringing the total number above common labor to 22.

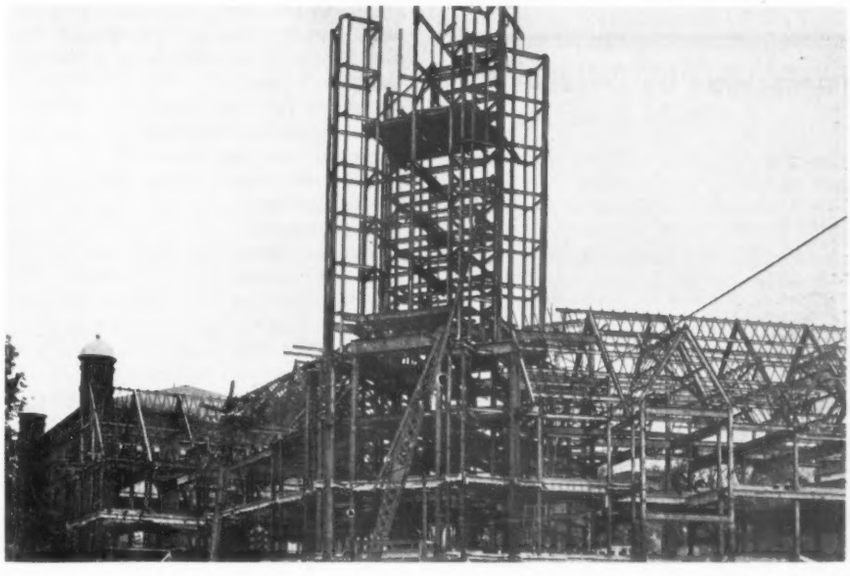
All these adjustments, it was discovered, would result in a net saving in hourly wage expenditures of 4.6 per cent. For one-third of the workers the zoning scheme involved no change in compensation; for about 26 per cent, the plan brought increased earnings; for the remainder, reductions in pay were introduced.

As reported in STEEL, Sept. 24, page 17, with the announcement of the United States Steel Corp.'s 10 per cent reduction in wages, the American Rolling Mill Co. made an additional horizontal cut of 5.4 per cent, making the net reduction in hourly wage expenditures 10 per cent.

Common Labor Paid $3.60

Under the newly adopted plan common labor will receive $3.60 a day. Other representative rates are: First class machinist, $7; first open-hearth helper, $9.50; second open-hearth helper, $7; roller-leveller operator, $5; cold roller, $8; blooming mill engineer, $13; motor inspector, $7; pickler, $5.90.

These rates apply to 8, 9, and 10-hour shifts, no difference in the total day's pay being made as the men are transferred from one shift to another. The plan also includes a 10



—*Wide World*

Yale university alleviating unemployment with building construction program: The New Haven, Conn., institution will expend $22,000,000 *in the next* 12 *months, mainly for new structures. Illustrated is the steelwork for the Sheffield scientific school which is to be completed next year at a cost of* $2,000,000

per cent bonus on tonnage applying to all levels, the maximum possible bonus having been based upon the capacity operations of 1929.

Foster Group Planning To Organize Steelworkers

Pittsburgh—Organization of steelworkers of the country was urged at a meeting here of 400 under the auspices of the Metal Workers' Industrial league, affiliated with the Trade Unity league, a communist body. Mass meetings are to be held in many steel towns, according to present plans.

William Z. Foster, national secretary of the Trades Union league, who was one of the leaders in the 1919 steel strike, advocated local strikes to enforce demand for a minimum wage of $5 a day.

Brotherhoods Plan Policy

Cleveland — Twenty-one railroad brotherhoods, claiming railroad officials are refusing to confer on the effect of shorter hours upon wage rates, state they will take up with congress at the next session the matter of providing unemployment relief. Shorter work days and weeks are believed by the brotherhoods to be the solution of unemployment, but until a survey is made no policy will be laid down. These brotherhoods are the ones which wrung the Adamson law, giving railroad workers an 8-hour day with overtime allowances, from congress.

Immigration, Also Depressed, Is Lowest in 70 Years

WASHINGTON—In immigration as well as in business there is a depression. When alien arrivals in the fiscal year ended last June 30 declined to 97,139 persons, Ellis Island did less business than in any year since the Civil war, according to revised statistics of the department of labor.

In 1921, the previous depression year, immigration was eight times the volume of 1930, or 805,228 persons. In 1931, which many expect to go down as the bottom of the present slump, the influx of aliens will be considerably fewer than last year's 97,139, according to present indications.

Since the depression set in, aliens have been increasingly wary of seeking their fortunes in the United States, and in this they have been abetted both by the federal restriction laws and a fixed policy of withholding passport visas where possible.

In 1929, for example, 279,678 persons came to the United States. By 1930 the number had eased off to 241,700, while last year—that ended June 30, 1931—arrivals totaled fewer than 100,000.

By comparison with previous peaks, the rate for the last fiscal year was barely one-twelfth that of boom immigration years. The all-time peak was 1,285,349 in 1907, with 1914, just as the World war was breaking, second with 1,218,480 persons.

Before the war about 75 per cent of all arrivals consisted of unskilled workers, but this has now fallen off to 60 per cent. These percentages are apart from persons wholly without occupation.

In the fiscal year just closed, 216 iron and steel workers came into the United States compared with 1380 during the previous fiscal year, while 196 iron and steel workers left the country, against 118 in the previous year.

Of the 97,139 immigrants admitted into the United States during the past fiscal year, 54,118 came in under the Immigration act of 1924 as aliens charged to the quota; 21,139 as natives of nonquota countries, principally Canada; 17,264 as husbands, wives and unmarried children of United States citizens, and 4618 as ministers, professors, women who have been American citizens, and other miscellaneous classes.

Immigration by Decades

Decade	Number of Alien Arrivals
1821-30	143,439
1831-40	599,125
1841-50	1,713,251
1851-60	2,598,214
1861-70	2,314,824
1871-80	2,812,191
1881-90	5,246,613
1890-1900	3,687,564
1901-10	8,795,386
1911-20	5,735,811
1921-30	4,107,209

Phoenix Sets 1000 Tons of Structurals in Day

A record for erecting structural steel is claimed for workmen of the Phoenix Bridge Co., Phoenixville, Pa., who in one day recently set 1000 tons of structurals for the bridge being constructed on Pennsylvania avenue, between Twenty-six and Twenty-seventh streets, Philadelphia. This record was set with the assistance of one crane; the previous record is said to have been 700 tons with the aid of two cranes. The job was under the immediate supervision of J. F. Kinter, general superintendent of erections, and Harry Archinal, superintendent of the Bridge company, which is a subsidiary of the Phoenix Iron Co. Samuel J. Reeves is president of the latter company.

Mine Workers Take Lower Wages To Force Recognition

Fairmont, W. Va. — Members of the United Mine Workers of America in West Virginia have voted for a wage reduction, instructing their officers to negotiate new scales with union coal mine operators. A reduction will be agreed to that is sufficient to enable the operators to compete with nonunion mines, the mine workers hoping to force the nonunion operators eventually to recognize their union.

Eastern Rail Merger Nears

New York—Eastern railroads announce they have completed details of the merger of eastern lines into four great systems—the Pennsylvania, New York Central, Baltimore & Ohio and Chesapeake & Ohio (or Van Sweringen)—and that formal application will be made shortly to the interstate commerce commission for approval. Save that the Virginian Railway is not definitely allocated, so far as known, the grouping and general details are substantially the same as presented in STEEL for Jan. 8, 1931, pages 15-16.

Will Defend Skyscraper

R. W. Johnston, engineer on the staff of Concrete Reinforcing Steel institute, Chicago, will give an illustrated lecture on "Tall Building Economy" before the Cleveland Engineering society at its new auditorium in the Hanna building, Cleveland, evening of Oct. 9.

New Markets for Gray Iron

Present and future markets for gray iron will be considered at a

"merchandising clinic," planned for the fourth annual convention of the Gray Iron institute at West Baden Springs, Ind., Oct. 15 and 16. Rate setting, interpretation of technical bulletins, employment, proposed specifications, and standard practices will be other topics under discussion. Dan M. Avey, editor, *The Foundry*, Cleveland, will present the closing address.

Arthur J. Tuscany, Terminal Tower, Cleveland, is secretary of the institute.

Undertake Safety Program

A six months' safety campaign in Ohio foundries is being sponsored by the Ohio Foundries association, Cleveland. Two district meetings have been held, one in Dayton and the other in Toledo, each meeting attended by about 50 foundrymen from the district.

The statewide campaign is being carried on in conjunction with industrial safety councils in various Ohio cities, in an effort to reduce the annual toll of 9012 foundry accidents.

Prescribes Southern Rates

Washington—Interstate commerce commission has issued an order regarding rates on iron and steel articles, from, to and between points in southern territory.

The commission denies general authority to the railroads to continue further rates in excess of intermediate rates, except where permission already has been granted. The order is effective March 15, 1932.

Financial Notes of Steel And Iron Industry

YOUNGSTOWN SHEET & TUBE CO., Youngstown, O., permanent first mortgage sinking fund 5 per cent gold bonds, due April 1, 1970, have been admitted to the list of the New York stock exchange, and the temporary bonds of the company have been stricken from the list.

□ □ □

R. C. Mahon Co., Detroit, has omitted the quarterly dividend of 55 cents on the preferred stock due at this time.

□ □ □

Acme Steel Co., Chicago, has declared a quarterly dividend of 50 cents, compared with 62½ cents paid previously.

□ □ □

Union Metal Mfg. Co., Canton, O., has omitted the quarterly of 37½ cents on the common due at this time. The regular $2 quarterly on the preferred was declared, payable Oct. 1 to record Sept. 25.

September Almost Record in Shapes, Due to Public Work

PUBLIC and semi-public building projects are the buttress of the structural steel market, which in turn is proving the mainstay of finished steel production.

Orders for structural steel in September reached the almost unprecedented weekly average of 62,558 tons, second only to the 64,860-ton weekly average for March.

In September there were eight awards of 7000 tons or larger, and in every instance these jobs were public works — viaducts, bridges, courthouses or postoffices.

Of the 19 other orders in September for 1000 tons or more, this public character of work was predominant.

September's largest award was 58,700 tons for a bridge at New Orleans; bids for the approaches were under a technical cloud, but the structural trade considers the work awarded.

Were it not for the placing in March of 125,000 tons of steel for the Rockefeller interests' Radio City project in New York, the September weekly average would have been the largest for all time, even without measurable private support of the market.

Averages are computed from the week-to-week reports published by STEEL, which exclude work under 100 tons. Necessarily there is some overlapping at month ends, and awards are not necessarily synonymous with production or shipments.

Structural Awards for 1931

	Month's total, tons	Weekly average tons
January	135,089	27,018
February	106,635	26,659
March	259,439	64,860
April	256,121	51,224
May	94,826	23,457
June	152,302	38,076
July	146,686	29,337
August	80,096	20,024
September	250,229	62,558

Roads Say: Raise Rates Or Raise Wage Issue

Washington—Interstate commerce commission concluded hearing the final argument in the 15 per cent freight rate case Sept. 30, when the railroads were allowed to make statements in rebuttal.

There was a strong intimation in the concluding statements of the railroad attorneys that if the increase is not granted by the commission it may be necessary to reduce the wage rates of most railroad workers.

"Everybody knows," said Grenville Clark, of New York counsel for the roads, "that denial of this application will accelerate and force an effort to cut wages of railroad workers.

"The wage question is a very large and complicated one. I tried to figure it out. I have figured as nearly as possible that it would mean 1400 different possible mediation cases. This commission should not hurl this difficult controversy on the country at this time."

Washington Ponders Tariff Rise as Gold Flees

Washington—Treasury department and tariff commission officials are beginning a study to ascertain the probable effect of the various suspensions of the gold standard upon the foreign trade of the United States.

The question is: Will foreign-

Bridges Dominate in September Structural Lettings

Project	Fabricator	Tonnage
Bridge, New Orleans,	American Bridge Co. and McClintic-Marshall Corp.	58,700
Postoffice, Chicago,	American Bridge Co.	48,200
Parcel post building, New York,	McClintic-Marshall Corp.	24,000
Viaduct, New Jersey,	Taylor-Fichter Steel Construction Co.	8,200
Sewage works, Milwaukee,	Inland Steel Co. and Bethlehem Steel Co.	8,000
Bridges, Louisiana, Mt. Vernon	Bridge Co. and Nashville Bridge Co.	8,000
Court house, Bronx county, N. Y.,	George A. Just Co.	7,700
Bridge, Shelter island, N. Y.,	Independent Bridge Co.	7,000

made products produced at lower costs due to depreciated foreign currency flow to American markets, and will it be advisable to increase tariff duties to protect home industries?

Any action, it is felt, would have to be taken by congress. The flexible provisions of the tariff law permit a 50 per cent advance or decrease in rates but only after production costs at home and abroad have been studied—a prolonged method for most commodities and not regarded as expedient.

Canada is understood already to have adjusted her duties to meet the new monetary situation, British goods receiving greater preference.

Editor's Note: Already the British steel markets reflect a better tone, with the gold standard suspended. Raw materials are in greater demand. On some products, prices are being advanced to offset the depreciation in sterling. Some believe they detect the first stages of inflation.

Complete Longest Suspension Bridge on Anniversary of Roebling's Arrival

OCT. 24 has been set for the opening of the George Washington bridge across the Hudson river, connecting New York City and Fort Lee, N. J., and while it was not so arranged, it is regarded as a fitting mark to commemorate the one-hundredth anniversary of the landing of John A. Roebling in America, Aug. 6, 1831. Roebling, founder of the John A. Roebling's Sons Co., Trenton, N. J., pioneered in the construction of parallel wire cables and long-span suspension bridges.

His idea for bridge building was considered by engineers as visionary. After many years of struggle against skepticism and opposition, his first great achievement was in 1884 when the first suspension bridge, the Pittsburgh acqueduct, was constructed.

Completion of the famous structure, the Brooklyn bridge, opened in 1883, marked the greatest advance in suspension bridges up to that time. The opening of the George Washington bridge in October will signal the completion of the largest suspension bridge in the world today. Both of these bridges were cabled by the Roebling company.

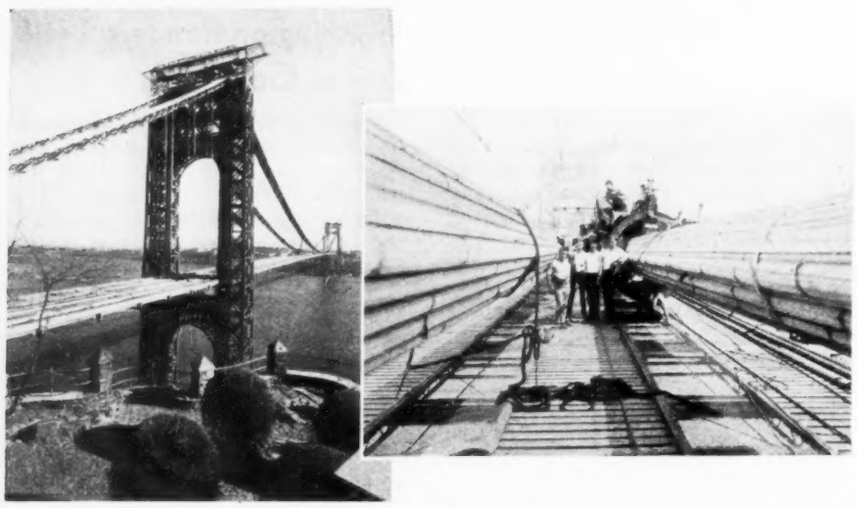
The length of the main span of the George Washington bridge is 3500 feet, whereas that of the Brooklyn bridge is 1596 feet. The number of cables—four—is the same in both bridges, but the number of strands per cable is 61 in the latest, as compared with 19. The total number of parallel wires in the main cables of the Washington bridge is 105,896, as against 21,432 in the Brooklyn bridge.

Further comparisons shows the increase in size: 28,500 tons of wire in the main cables, compared with 3272 tons; total length of cables between anchorages, 5212 feet, in contrast with 3578 feet. The total strength of the main cables in the Washington bridge is 360,000 tons; in the Brooklyn bridge, 44,800 tons. The height of the towers has grown to 635 feet from 273 feet.

During the 43 years from the opening of the Brooklyn bridge in 1883 and the Delaware river bridge, another Roebling-cabled bridge, at Philadelphia, in 1926, the increase in span length was only 12 per cent. Yet within five years after 1926 the span length has increased 100 per cent. The engineering report on the proposed Washington bridge as far back as 1894 stated that a span length of 4335 feet was practical, but the toll revenue would not be sufficient to warrant the cost.

When first opened to traffic, the cost of the bridge is expected to be within $60,000,000, and the estimated cost of the finished bridge, with lower deck, constructed for full capacity is $75,000,000. Tolls are expected to defray the cost of the entire structure.

Back in Butler county, Pennsylvania, where John Roebling was one of the founders of Germania, later called Saxonburg, the Roebling "idea" was conceived, and, according to tradition the first wire rope was made. The idea—simple enough—that a bundle of wire, compacted, could be made to suspend gigantic bridges, not only has become a reality, but its fulfillment has also kept pace with the modern "tempo," for in 294 calendar days 56,600,000 pounds of wire was constructed in position in the bridge.



Longest suspension bridge in the world to be opened in October. This is known as the Hudson river bridge, and also the Fort Lee bridge, though its official name is the George Washington. With a main span of 3500 feet, it connects Fort Washington Point in New York City and Fort Lee, N. J. At the right are two of the four cables. Each cable as erected has a hexagonal cross section, which in the final compacting is reduced to a circular cross section of 36 inches

Salesmen To Be Moses of Depression Period

Salesmen will be depended upon largely to lead industry out of the present depression, said Charles F. Abbott, executive director, American Institute of Steel Construction, New York, in a recent address.

"Today there is a great demand for men who can sell, who can move merchandise from warehouse or factory and place it in satisfactory service in the hands of the ultimate consumer and complete the process at a profit. But it is far more essential than ever that this be done at a profit to the producer and to the merchant."

Auto Shipments To Gain

Railroads in the Great Lakes district expect in the last quarter of 1931 to load 348,661 cars of freight, 8.7 per cent fewer than a year ago. In loading of automobiles an increase of 6 per cent is anticipated. Decreased loadings by industries include 5.8 per cent for iron and steel, 14.9 per cent for machinery and boilers and 9.5 per cent for farm implements. In coal and coke an even break with last year is expected. This forecast is by the Great Lakes Regional Advisory board, which met at Akron, O., Sept. 23.

Drop in Iron Production Less Severe; Fewer Stacks Out

INDICATIONS that coke pig iron production in the United States may be reaching rock bottom are to be found in the statistics for September. Since average daily production began to decline last May, the loss in September was the smallest for any of the five months; likewise, since the reduction in operating blast furnaces started in April, the loss of last month was the smallest of any month and for the first time in this six-month period the number of steelworks stacks turned upward.

AVERAGE DAILY PRODUCTION

	1931	1930	1929	1928
Jan.	55,337	91,573	110,742	92,113
Feb.	61,114	101,640	114,942	99,954
Mar.	65,448	104,930	119,662	103,199
Apr.	66,986	106,371	122,106	106,066
May	64,355	104,564	125,753	106,219
June	54,599	97,817	123,887	102,745
July	47,170	85,110	122,016	99,120
Aug.	41,264	81,455	120,845	101,193
Sept.	38,821	75,893	116,548	102,120
Oct.	.....	69,851	115,747	108,824
Nov.	.....	62,182	106,081	110,155
Dec.	.....	53,732	91,513	108,702
Ave.	54,960	86,141	115,808	103,365

Nevertheless, total and average daily output fell to levels which were the lowest in ten years. Active stacks, however, were at the lowest point since the all-time bottom was reached in July and August of 1921.

September's average daily rate was 38,821 gross tons, the decline from August's rate of 41,264 tons being 2443 tons, or 5.9 per cent. This figure was the lowest since September, 1921, when daily production was 32,859 tons. By the way of contrast, the all-time low mark was 27,892 tons in July, 1921. The daily rate for September one year ago was 75,893 tons.

SEPTEMBER PIG IRON PRODUCTION

	No. in blast last day of month Sept.	Aug.	Total tonnage made Merchant	Nonmerchant
Ohio	21	20	39,471	274,091
Pennsylvania	17	19	30,486	224,837
Alabama	9	8	58,242	36,823
Illinois	6	8	50,204	69,928
New York	6	6	61,994	48,944
Colorado	1	1		
Indiana	5	5		
Maryland	2	2	.....	158,784
Virginia	0	0		
Wisconsin	0	0		
Kentucky	1	1		
Massachusetts	0	0		
Tennessee	0	0	8,349	51,575
Utah	1	0		
West Virginia	2	2		
Michigan	3	3		
Minnesota	0	0	15,090	21,437
Missouri	0	0		
New Jersey	0	0		
Spiegel and ferro—all states	....	....	4,272	10,119
Total	74	75	268,108	896,538

MONTHLY PRODUCTION

	1931	1930	1929
Jan.	1,715,443	2,838,751	3,433,028
Feb.	1,711,192	2,845,937	3,218,376
Mar.	2,028,906	3,252,822	3,709,518
April	2,009,582	3,191,119	3,663,167
May	1,995,001	3,241,477	3,898,344
June	1,637,998	2,934,508	3,715,104
July	1,462,270	2,638,441	3,782,511
Aug.	1,279,205	2,525,105	3,746,198
Sept.	1,164,646	2,276,781	3,496,454
Oct.	.....	2,165,374	3,588,146
Nov.	.....	1,865,458	3,182,420
Dec.	.....	1,665,715	2,836,917
Total	15,004,243	31,441,488	42,270,183

Production decreased 2631 tons in May, 9756 tons in June, 7429 tons in July, 5906 tons in August and 2443 tons in September.

Total production in September was 1,164,646 gross tons, which, compared with the 1,279,205 tons in August, was a decrease of 114,559 tons, or 8.9 per cent. September, however, was a one-day shorter month than August. The output was the lowest since 985,795 tons was made in September, 1921, and is to be compared with 2,276,781 tons made in September a year ago.

RATE OF OPERATION
(Relation of Production to Capacity)

	1931[1]	1930[2]	1929[3]	1928[4]
January	38.4	65.0	79.0	66.8
February	42.5	72.1	82.2	72.5
March	45.4	74.5	85.5	74.8
April	46.5	75.4	87.4	76.8
May	44.7	74.2	89.8	77.0
June	37.9	69.3	88.5	74.4
July	32.7	60.3	87.2	71.8
August	28.7	57.8	86.4	73.3
September	27.0	53.8	83.3	74.1
October	.....	49.6	82.6	78.9
November	.....	44.1	75.8	79.8
December	.....	38.1	65.5	78.8

[1]Based on capacity of 52,515,875 tons Dec. 31, 1930; [2]on capacity of 51,490,680 tons; [3]on capacity of 51,069,895 tons; [4]on capacity of 50,329,750 tons. Capacities by American Iron and Steel institute.

For the 9-month period of this year, output has amounted to 15,004,243 tons, or only 58.3 per cent of the 25,744,941 tons for the three quarters of 1930.

On the last day of September, 74 blast furnaces were in operation, this being a loss of 1 from the 75 active on Aug. 30. This total was the lowest since July and August, 1921, when 69 were making iron. In September, 4 merchant furnaces were blown out or banked and 2 were blown in, the net loss being 2. Of the nonmerchant or steelworks class, 5 were blown out and 6 blown in, the net increase being 1 stack.

March with a total of 116 set the high point for operating furnaces this year. Reductions in the 6-month period have been as follows: April 3, May 8, June 14, July 9, August 7 and September 1. During this period, 42 furnaces have dropped operations.

Relating production to capacity, operations in September were at the rate of 27 per cent, compared with 28.7 per cent in August and 32.7 in July. April, the best production month this year, had a rate of 46.5 per cent.

Among furnaces resuming operations in September were the following: In Ohio: One Central, American Steel & Wire Co.; Portsmouth, Wheeling Steel Corp. In Pennsylvania: One Donora, American Steel & Wire Co.; one Farrell, Carnegie Steel Co. In Illinois: Gary No. 2, Illinois Steel Co. In Alabama: Fairfield No. 6 Tennessee Coal, Iron & Railroad Co. In Utah: Ironton, Columbia Steel Co.

Furnaces blown out or banked included: In Ohio: Globe, Globe Iron Co.; Hubbard No. 2, Youngstown Sheet & Tube Co. In Pennsylvania: Steelton A, Bethlehem Steel Co.; Edgar Thomson F and H and Carrie No. 4, Carnegie Steel Co. In Illinois: Gary No. 4 and Joliet No. 4, Illinois Steel Co.; South Chicago No. 3, Youngstown Sheet & Tube Co.

One furnace of the Ford Motor Co., Fordson, Mich., will be shut down some time during the week of Oct. 5 for rebuilding.

The Business Week In Washington

WHEN Herbert Hoover, then secretary of commerce, appeared before the interstate commerce commission in 1922 at a hearing on freight rates he said: "The greatest impulse that can be given to recovery from any source whatsoever is the reduction of rates on primary commodities combined with the immediate resumption of railway construction and equipment."

This was brought out at the close of the commission's hearing on the 15 per cent rate advance case. Oral arguments have been concluded; the matter is now one for deliberation by the commission.

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Cuban import duties on certain classifications of cast iron pipe have been increased by presidential decree, according to Trade Commissioner Tewksbury, at Havana. Goods shipped on or before Sept. 11 are not affected.

Industrial Men in the Day's News

Howard H. Cook, Secretary, American Iron and Steel Institute

FOR 21 years assistant secretary of the American Iron and Steel institute, he now succeeds to the position of secretary, left vacant by the death of E. A. S. Clarke.

HIS training has been in economic study of the iron and steel industry and his particular interest in the industry dates back to 1907.

AT one time Mr. Cook was special agent for the department of commerce, assigned to special investigation, including costs in steel manufacture.

IN THE recent appointment of Howard H. Cook as secretary, the American Iron and Steel institute, New York, has selected a trained economist whose study began almost 40 years ago and whose particular interest in economics as applied to iron and steel dates back to 1907, when he undertook a study of conditions of the industry for the government.

In 1910 he became directly affiliated with the industry as assistant secretary of the Institute. As noted in the Oct. 1 issue of STEEL, he succeeds as secretary the late E. A. S. Clarke, whose death occurred last May.

Born in Salem, Mass., and educated in the public schools of that city, Mr. Cook attended Harvard university, receiving an A.B. degree in 1893, an A.M. degree in 1894 and a Ph.D. degree in 1896. His doctor's degree was in economics. On leaving Harvard he became clerk of a special commission to revise the tax laws of Massachusetts, and on the completion of this work he was appointed chief clerk of the department of municipal statistics, Boston.

In 1907 Mr. Cook was appointed special agent of the department of commerce, Washington, assigned to the study of economic conditions in the iron and steel industry, including reserves of raw materials, cost of assemblage and cost of manufacture of finished products. Three years later he resigned to become assistant secretary of the American Iron and Steel institute, where he had a further opportunity of applying his interest in economics to the iron and steel industry.

Mr. Cook is a member of the Academy of Political Science, New York, and of the American Association of Science, Washington, evincing a lively interest in various lines of scientific research. He is a member of the Harvard club. He resides in Bronxville, New York.

FREDERICK J. GRIFFITHS has resigned as president of the Republic Research Corp., division of Republic Steel Corp., Youngstown, O., to become president and director of Timken Steel & Tube Co., Canton, O. Mr. Griffiths' affiliation with the steel industry began at the age of 16 with the Cleveland Rolling Mill Co. There followed positions with the Portsmouth Steel Co. and later the United Alloy Co., the latter forerunner of the United Alloy Steel Co. After becoming open-hearth superintendent, he left in 1914 as assistant general superintendent to become vice president and general superintendent for the Central Steel Co., later Central Alloy Steel Co., of which he was made president in 1921. When the Republic Steel Corp. was formed in December, 1929, he was named head of the division to take charge of all metallurgical and research work.

M. T. Lothrop, president, Timken Roller Bearing Co. which owns the Timken Steel & Tube Co., has been named chairman of the latter company.

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Harry T. Gilbert, until September, 1930, vice president in charge of sales, Republic Steel Corp., Youngstown, O., has been named general manager, Midland Steel Products Co., Cleveland, effective Oct. 15. Prior to his affiliation with Republic Steel Corp. in 1928, Mr. Gilbert was vice president of Sharon Steel Hoop Co. Before his resignation from Republic Steel in June ,1930, Mr. Gilbert was special assistant to the president.

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William T. Bentz has been appointed manager of sales, rail steel products, Republic Steel Corp., Youngstown, O. In his former capacity as sales head of Steel and Tubes Inc., a Republic subsidiary, Mr. Bentz had many years' experience with hard steel products. He will continue for the present to make his headquarters in Cleveland.

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Clifton Taylor has resigned as sales manager of the Molybdenum

Corp. of America, a post he has occupied since formation of the company, and will devote the greater part of his time in the future to Steel Industries Engineering Corp., Empire building, Pittsburgh, designer and manufacturer of special blast furnace and steel mill equipment. Mr. Taylor has been chairman of the board of the latter company since early in the year. He will continue with the Molybdenum corporation in a special capacity.

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Irving H. Jones, formerly associated with the Crucible Steel Co. of America, has become western district manager of the Molybdenum Corp. of America, with headquarters at 208 South LaSalle street, Chicago.

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H. J. Freyn, president, Freyn Engineering Co., Chicago, will sail from England Oct. 7, returning from a three months' sojourn in England, France, Germany and the Soviet Russia where he has been inspecting the progress of contracts which his company is executing.

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A. L. Humphrey, president, and C. A. Rowan, executive president, of the Westinghouse Air Brake Co., Wilmerding, Pa., with G. A. Blackmore, president of the Union Switch & Signal Co., Swissvale, Pa. sailed Sept. 26 for a business tour of England and the Continent.

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Roscoe Seybold, for 24 years in the employ of the Westinghouse Electric & Mfg. Co. and recently assistant to the president, has been made comptroller of the company. He entered the price department in 1907, where he remained until 1926, when made assistant to F. A. Merrick, president.

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W. J. McDonough has joined the engineering staff of Northern Equipment Co., Erie Pa., manufacturer of Copes feed water regulators and allied equipment. Mr. McDonough from 1925 to 1927 was affiliated with Northern Equipment Co. as a field engineer, and since that time has been connected with Kissick-Fenno Co., New York, in a sales capacity.

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R. E. McKenzie, formerly president of the McKenzie Mfg. Co., which he has disposed of, has become general manager of the Bump Mfg. Co., La Crosse, Wis., manufacturer of paper fasteners, pumps and other products. George P. Bump, founder of the company and still a large stockholder, continues his association with the company in an engineering capacity.

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J. H. Gardner, president and treasurer, Bingham & Taylor Corp., Buffalo, was recently elected a director. Fred C. Burkheart, vice president; Walter F. Quinn, secretary; and David Murray, assistant secretary, also were elected directors. Bingham & Taylor Corp. recently became a member of the Gray Iron institute Inc., Cleveland.

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Col. N. L. Howard has been elected president of the North American Car Co., Chicago, succeeding Erwin R. Brigham, who has resigned, effective Oct. 1. Colonel Howard will continue as chairman of the board. Mr. Brigham remains as a director and member of the executive committee.

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William C. Franz, president of the Algoma Steel Corp., Sault Ste. Marie, Ont., has also been made president of the Algoma Consolidated Corp., Montreal, Que. Last week it was announced that Sir William E. Stavert was made chairman of the latter corporation.

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Lamar S. Peregoy, president, Sivyer Steel Casting Co., Milwaukee and Chicago, recently was appointed to the board of directors of the Steel Founders' Society of America Inc., to fill the unexpired term of F. J. Stanley, Michigan Steel Casting Co., Detroit, recently resigned.

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Robert L. Streeter, since 1920 vice president of the United States Aluminum Co., Pittsburgh, and general superintendent of fabricating plants, has resigned. Mr. Streeter first was employed by the Packard Motor Car Co., Detroit. In 1905 he joined the Lackawanna Steel Co., Lackawanna, N. Y., where he remained for five years. In 1910 he joined the faculty of Rensselaer Polytechnical institute as professor of steam and gas engine design.

During the war Mr. Streeter was in charge of experimental work on automotive equipment and artillery material at Rock Island arsenal. Later he was made general manager of the arsenal. Shortly after the war he became affiliated with the Alumium Co. of America as chief mechanical engineer. He was appointed in November, 1920, to the office from which he has resigned. Mr. Streeter was actively identified with the design, construction and equipment of the new structural mill at Massena, N. Y.

Obituaries

JOHN BROCKENBROUGH NEWTON, since 1910 president of the Virginia Iron, Coal & Coke Co., Roanoke, Va., and one of the best known executives in the industry in Virginia, died Sept. 22. Mr. Newton was an officer of the Virginia company almost from its organization in 1899. At one time the company had 12 coke and one charcoal blast furnaces, with two rolling mills, a car-building plant, a pipe foundry and other finishing mills.

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Daniel Warren, 69, prominent in the import and export trade and in 1917 member of President Wilson's war trade board, died at Rye Neck, N. Y., Sept. 16.

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Fred C. Tashenberg, 59, president of the Tashenberg Boiler Works, Buffalo, died recently.

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Robert D. Platt, chief engineer, Koppers Construction Co., Pittsburgh, died Sept. 27. Mr. Platt entered the engineering department of the Koppers Co. in 1915, and was appointed chief engineer in 1928.

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W. H. Wiethe, 64, for many years superintendent of the Belmont plant of the Wheeling Steel Corp., died at Wheeling, W. Va., Sept. 28, following a brief illness.

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Adam Kreuter, 70, vice president, director and general factory manager of the American Laundry Machinery Co., Chicago, died Sept. 26, at McHenry, Ill. He had been in the laundry machinery business for 45 years, and was supervising head of the five plants of the American Laundry Machinery Co.

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Col. Edward A. Simmons, 56, president, Simmons-Boardman Publishing Co., New York, died Sept. 30. He had been identified with the Simmons company since 1889 and prior to becoming president was identified with *Railway Age*, published by the company.

He was organizer of the American Saw Works, American Machine Tool Co., Rogers-Eagle Grinding Machine Co., chairman of the board, Corley Mfg. Co., and Eagle Saw Co. Colonel Simmons was affiliated with several New York clubs and societies.

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Joseph Torrence Dougherty, 64, former superintendent of the Mercer works, Farrell, Pa., of American Sheet & Tin Plate Co., died recently at Miami, Fla. He was born in Indiana, Pa., and joined the Apollo Iron & Steel Co., Apollo, Pa., in 1898. Shortly after the organization of the American Sheet & Tin Plate Co. he became connected with that company.

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A. A. Grubb, member of Grubb & Marshall, consulting metallurgical engineers, Columbus, O., died Sept. 29. Mr. Grubb was a graduate of Denison university and after serving as officer in charge of the meteorological section, Aberdeen, Md., proving grounds during the war, became affiliated with the Ohio Brass Co., Mansfield, O., as director of laboratories. He did considerable research work on foundry sands and was a member of the American Chemical society, American Physical society and American Foundrymen's association, among others.

Steel Foundry Trade Static; Trend of Statistics Down

RATE of operations in the steel foundries of the country was practically unchanged in August from July, according to the Steel Founders' Society of America Inc.

August's figures show a slight decrease in the number of foundries reporting operations below 50 per cent, though in terms of capacity represented there was about a 6 per cent gain in connection with this item.

A considerable drop in bookings compared with July has occurred, 11 per cent more foundries reporting new orders less than 50 per cent capacity.

Sentiment over the outlook for future business seems little changed from that prevailing in July. The outlook is about evenly divided between poor and fair. Pig iron prices are holding firm, with some decreases in scrap prices noted, according to members' reports.

Foundry Equipment Orders 50 Per Cent Under July

Eighteen members of the Foundry Equipment Manufacturers' association reported a gross order index of only 16.9 in August, thus continuing a five-month decline and proving to be the lowest figure for at least the last four years. Shipments worked down to an index of 37.4 from 55.3 previously. Unfilled orders were consequently affected to register a 32.1 index, against July's 51.8. Order indexes are compared:

	1931	1930	1929	1928
Jan.	65.3	160.1	180.5	132.7
Feb.	54.7	196.4	197.0	123.6
Mar	174.4	164.1	209.4	138.6
Apr.	57.7	122.8	172.6	107.7
May	54.1	92.7	177.7	335.6
June	40.9	102.1	177.3	149.1
July	38.7	90.6	219.3	94.8
Aug.	16.9	85.2	229.5	278.0
Sept.	.....	91.0	216.3	170.0
Oct.	.....	50.0	245.3	185.0
Nov.	.....	45.3	128.6	197.8
Dec	.....	59.8	208.0	166.5

Base: Average monthly shipments for 1922-23-24 taken as 100.

August Loses July's Gain In Gray Iron Business

August orders for gray iron castings lost all of July's gain. New business was down six points to 39.2 per cent of normal, so foundry members of the Gray Iron Institute Inc., Cleveland, report.

Production in August was off only slightly, down 2 points to 48.8 per cent. At the close of August unfilled orders gained about a point to 32.9 per cent of normal. "Normal" in all cases is the average of months for the past three calendar years.

Three of 134 reporting members viewed the outlook at good, thirty-one term it fair; 63 poor; 31 bad. Production in the 1 to 100-ton a month foundries gained in August; that in the other tonnage classifications was off.

Steel Casting Orders Are Off Slightly in August

Despite August's drop from July in point of total steel casting orders booked, June remains the low month for 1931 to date. Production for August averaged 21.2 per cent of capacity for the principal manufacturers, who report the following statistics to the department of commerce.

1930	Total bookings tons	Per cent of capacity	Total production tons	Per cent of capacity
Aug.	50,370	34.9	64,303	44.6
8 mo.	691,829	59.9	779,851	67.0
Sept.	49,542	34.3	61,919	42.9
Oct.	45,552	31.6	59,522	41.2
Nov.	48,123	33.3	44,290	30.7
Dec.	49,387	34.2	46,290	32.1
Year	884,433	51.1	991,872	57.3
1931				
Jan.	46,810	32.1	46,294	31.8
Feb.	40,320	27.7	49,548	34.0
March	48,184	33.1	56,755	39.0
April	46,039	31.6	48,282	33.2
May	39,052	26.8	43,154	29.6
June	26,136	18.0	35,018	24.1
July*	32,869	22.6	31,751	21.8
Aug. **	28,016	19.2	30,920	21.2
8 mo.	307,426	26.4	341,722	29.3

*Revised.
**Preliminary.

Foundry Output Declines In Worcester District

Nine foundries in the Worcester, Mass., foundry council produced 1,309,000 pounds of castings during August. This figure represents a decline from the July output of 1,404,114 pounds, and 1,294,355 in June. These figures represent total production of the district, as recently two foundries have dropped from the active council membership, thus leavng nine.

August Machine Tool Orders Are Higher

After dropping for four successive months, total actual orders for machine tools revealed an August index improved over July. The "C" classification of the National Machine Tool Builders' association made the best showing for the month, and the "A" group came next with a 33 per cent improvement. Shipments were generally heavier in August than July, though unfilled orders were decreased. By classes, index of actual gross orders follows:

1930	*Index A	*Index B	*Index C	Total
Aug.	102.4	153.9	119.1	113.8
Sept.	129.7	138.8	215.9	135.9
Oct.	81.3	112.3	118.1	90.1
Nov.	56.0	67.8	96.6	60.4
Dec.	58.4	92.7	126.6	68.8
Yr. av.	119.8	146.4	164.7	127.8
1931				
Jan.	64.6	75.1	68.6	66.9
Feb.	68.3	129.8	93.1	83.7
March	109.2	133.4	180.9	117.6
April	97.7	130.3	95.0	105.1
May	81.4	104.5	105.7	87.2
June	74.3	70.3	80.7	73.6
July	52.1	95.4	66.1	61.5
Aug.	69.6	72.5	105.0	71.7

*Note—Index A, base over $50,000; Index B, bases $10,000 to $50,000; Index C, base less than $10,000. Base: average shipments for years 1922-23-24. Totals: The total of all reports is not an average of A, B and C, but the sum of each item in percentage of the total base.

Malleable Casting Plants Under 20 Per Cent Busy

With a monthly capacity of 97,722 tons, production of malleable castings in August at 18,373 tons was only 18.8 capacity engaged. New bookings were further depressed. The monthly decline in production has been continuous since April, according to the department of commerce:

1930	Output, tons	Shipments, tons	Orders booked, tons	Per cent operated
Aug.	25,614	31,845	25,409	26.2
8 mo.	402,145	407,924	371,519	51.0
Sept.	26,528	29,223	26,251	27.2
Oct.	28,785	29,206	24,171	29.0
Nov.	27,114	25,974	27,451	27.8
Dec.	30,431	27,474	26,433	31.1
Yr.	515,003	519,801	475,925	43.6
1931				
Jan.	31,267	31,536	32,676	31.5
Feb.	33,587	32,663	32,566	34.4
March	35,210	36,677	34,331	35.9
April	36,076	37,693	36,086	36.3
May	31,344	36,686	28,208	32.1
June	23,837	28,132	22,176	24.5
July*	19,943	23,511	19,400	20.1
Aug.**	18,373	20,301	18,305	18.8
8 mo.	229,637	247,199	223,748	29.2

*Revised. **Preliminary.

By-Product Coke Off; Beehive Output at Low

Further recession in production and a further gain in producers' stocks were the outstanding features in the coke market during August. Stocks of by-product at producers' plants increased 6.9 per cent, while production fell. Eighty-seven by-product plants operated at about 47 per cent of their capacity, according to department of commerce figures.

which reveal that beehive output was the lowest since the early history of the industry:

	In Net Tons		
1930	By-product coke	Beehive coke	Total coke
August	3,637,339	169,500	3,806,839
1931			
July	2,568,726	75,900	2,644,626
August	2,442,824	69,500	2,512,324

Steel Barrel Production Near January Low Level

Steel barrel output recorded the second low for 1931 in August, being just above the figure for January. With 449,590 barrels produced, the industry was operating during the month at 31.6 per cent capacity. Shipments were likewise restricted, though immediate unfilled orders were steady, reports the department of commerce:

1930	Production	Shipments	Unfilled orders within 30 days
Aug.	553,842	552,265	237,745
8 mo.	5,345,021	5,342,873	.....
Sept.	564,927	565,204	253,745
Oct.	616,121	619,558	275,778
Nov.	497,539	500,409	230,960
Dec.	412,283	406,327	188,902
Year	7,435,891	7,434,371	.....
1931			
Jan.	421,814	427,622	210,416
Feb.	450,134	449,485	231,738
March	550,583	554,332	242,626
April	591,399	600,566	253,622
May	610,788	618,801	248,138
June	552,955	549,781	239,290
July	580,565	581,450	238,258
Aug.	449,590	455,502	235,002
8 mo.	4,207,828	4,237,539	.....

*Revised.

Steel Shipments Over Ohio River Gain in August

River shipments of iron and steel products in the Pittsburgh district increased during August but continued at less than half the tonnage of 1930. Shipments over the Ohio river were the heaviest since May, though traffic on the Monongahela, reflecting interplant activity, was the smallest for any month this year. Comparative monthly figures follows:

1930	Allegheny	Monongahela	Ohio
August	2,600	96,498	107,948
8 mo.	5,835	805,246	843,621
Sept.	5,100	106,079	109,129
Oct.	11,490	105,451	138,109
Nov.	17,850	75,202	95,644
Dec.	3,800	46,972	50,403
Year	44,075	1,133,950	1,236,906
1931			
Jan.	50	90,405	88,089
Feb.	.....	58,847	75,264
March	.....	76,137	104,792
April	1,250	57,751	91,570
May	1,330	35,373	59,611
June	500	21,340	46,945
July	717	21,917	39,300
August	5,800	14,522	49,164
8 mo.	9,647	376,292	554,735

Here and There in Industry

GENERAL AVIATION MFG. CO., controlled by the General Motors Corp., has taken over the aircraft plant of the Curtiss-Caproni Corp. at Baltimore and will center its manufacturing operations there. Plants at Passaic and Hasbrouck Heights, N. J., and Wheeling, W. Va., are to be ababndoned and work transferred to the Baltimore plant. Headquarters offices will be moved from New York to Baltimore. In addition to this large airplane interest, Baltimore is the home of the Glenn H. Martin Co., one of the largest airplane manufacturers in the world and the B/J Airplane Corp., the manufacturing unit of the North American Aviation Corp.

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Jenkins-Vulcan Spring Co., Richmond, Ind., which has discontinued operations, will dispose of its plant by private sale. T. B. Jenkins is manager.

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Chromium Plating Co. is the new name for Protective Metals Inc., Tulsa, Okla. In a reorganization, W. H. Helmerich of Tulsa was elected president, and C. R. Prichard, manager. Mr. Prichard was formerly with the old company, which operates a plating plant at Sand Springs, Okla.

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Independent Pneumatic Tool Co., 600 West Jackson boulevard, Chicago, has moved its office at Birmingham, Ala., from the Comer building to 915 North Seventh avenue. The new location has warehouse facilities enabling the company to carry a complete line of pneumatic and electric tools and parts. H. F. Halbert is manager.

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Todd Engineering, Dry Dock & Repair Corp., New York, has acquired the floating docks and machinery maintained at New Orleans by Jahncke Dry Docks Inc. The latter retains its plant and buildings. Ernest Lee Jahncke, assistant secretary of the navy, and his brothers, Walter and Paul Jahncke, were owners and operators of Jahncke Dry Docks Inc.

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Triumph Electric Corp., Cincinnati, has concluded a license agreement with the Burke Electric Co., Erie, Pa. by which the latter will manufacture under patents held by the former its super high torque across-the-line motors, with welded steel frame construction, in open and enclosed fan-cooled types. The enclosed types will include the design of ventilation for which patents are held by the Burke Electric Co.

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Stoughton Co., Stoughton, Wis., established as the Stoughton Wagon Co. in 1855, has inaugurated an expansion plan including trailers and a general line of motor truck equipment in addition to its line of wagons, trucks and automobile truck bodies. Charles R. Jahn, for several years sales manager of the Highway Trailer Co., Edgerton, Wis., has been appointed general manager of the new division.

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Comet Engine Co., Madison, Wis., manufacturer of aircraft engines up to 165 horsepower, has been purchased by Maj. Leslie G. Mulzer, proprietor of the Tri-City airport, Wisconsin Rapids, Wis., and the equipment will be moved there. Parts sufficient for 200 engines are on hand and will be assembled on order and also in ground school classwork of the Tri-City airport.

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Timken-Michigan Co., Columbus, O., has been formed to manufacture plug valves and leak clamps for use on cast iron pipe and has taken over the Michigan Valve & Foundry Co., Spruce street, Columbus. The screw lift valve formerly manufactured by the latter will be manufactured by the new company. R. J. Goldie, vice president and general manager of the Michigan Valve & Foundry Co., is president, and Fred Glover, president of Timken-Detroit Axle Co., is vice president. W. C. Wood, secretary of the Timken-Detroit Axle Co., is secretary.

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Cold Storage Refrigerator Co., Eau Claire, Wis., has sold its plant and business to the Eau Claire Cold Storage Corp., newly organized, and will be reopened immediately with a full crew of 160 men. The factory, after changes in equipment now under way, will have a capacity of 50,000 ice boxes a year, largely of steel construction. C. W. Churchill, associated with the old company for nearly 25 years, has been appointed general manager. A. W. Koehn, LaCrosse, Wis., will be factory superintendent. Except for Mr. Churchill, the stockholders in the new company are LaCrosse manufacturers and capitalists.

EDITORIAL

Some Companies Progress; Others Lose Ground—Why?

SOMEONE has said that a company under mediocre or even poor management can make money in time of general prosperity but that only concerns blessed with executives of high caliber can make progress during a prolonged period of depression.

The truth of this observation never was more forcibly demonstrated than today, when numerous companies—once the possessors of proud records and enviable reputations—now are on the road to oblivion. At the same time one sees another group of concerns, many of which have never enjoyed conspicuous success, gradually forging to the front.

Numerous factors enter into the success or failure of an industrial company. Occasionally external influences far beyond the control of management make it impossible for an establishment to continue in business. But in nine out of ten cases industrial mortality can be traced to poor management.

For this reason it is interesting to take note of what well managed companies are doing to meet the serious threat of the depression. A study of their methods should reveal certain fundamental rules of procedure applicable to many lines of business.

Millstones of High Overhead and Obsolete Plants Retard Progress

As the first case study, consider a steel company which is making a remarkable record against most discouraging odds. Its present strength lies primarily in its low overhead, the high efficiency of its modern equipment and the skill of its personnel. While many of its competitors own numerous obsolete mills and furnaces, this steelmaker's plants are singularly free from antiquated equipment and are maintained in apple pie order. Its operating personnel is organized into a smooth-running machine with little lost motion. The officers of this company place major emphasis on the efficiency of their equipment.

No. 2 is another steel company which is making noteworthy progress. Its dividend record at the moment is disappointing, but the concern is gaining strength at a time when others under like circumstances are steadily losing ground. It is moving forward largely because its management was prompt to see the need of stripping down to fighting trim. During the past two years it has abandoned several outmoded mills, consolidated its operations in its more favorably located plants, and subjected its executive and operating force to a thorough house cleaning which has eliminated scores of high salaried drones. It is fast approaching a state of efficiency which will insure good profits when operations improve. The officers of this company believe pruning of dead timber (in plant and staff) is the key to progress.

Good Management Has No Substitute—Especially in Slack Period

Another company is making headway against the current by concentrating its strength where it will do the most good. Its management has gone over the markets for its products with a fine toothed comb and has selected a certain few which seem to offer the greatest opportunities under present conditions. Work on border line or "fringe" prospects has been curtailed and in some instances abandoned entirely and the full force of sales and promotion effort is being focused on preferred markets. As a result of this policy, the company has rid itself of some business that was decidedly unprofitable and is gradually gaining a stronger position in fields where profits can be made.

A study of other concerns that are strengthening their positions in time of depression shows that most of them are pursuing policies similar to those outlined in the foregoing paragraphs. There is nothing new or spectacular in these methods. In fact they are so commonplace that many executives are likely to discount their effectiveness. A certain president, whose company seems to be headed for disaster, recently intimated that he had tried all of these policies but had found they "do not work when your back is against the wall."

Outsiders who know something about his company are not deceived by this statement. They know his alleged effort to cut overhead was ineffective because his horizontal salary cuts, while reducing expenses, did not remove a number of misfit high-priced executives. They know that his attempt to put his plants in order has failed because he lacked the courage to go far enough in scrapping old equipment.

In brief, he, like many others, has used the pruning shears, but without the skill and intelligence required in this period.

"STEEL" ADVANCES ISSUE DATE

WITH this issue STEEL takes another forward step in its carefully prepared plan for constantly improving its service to readers and advertisers.

The issue and delivery date has been advanced from Thursday to Monday.

IN effecting this change the publishers of STEEL realize a desire of long standing which until now has been thwarted by mechanical difficulties.

The new schedule has numerous obvious advantages.

In issuing the publication so that copies arrive on readers' desks on Monday, STEEL is able to present the news of the calendar week rather than that of parts of two weeks.

Each issue will be current for a full week, whereas previously the issue dated and delivered on Thursday was current for the remainder of the week only, becoming "last week's issue" on the following Monday.

By utilizing the non-business week-end instead of a busy mid-week period for mail train distribution, the new schedule permits STEEL to go to press at the end of one business period and to be available to readers at the begining of the next business period.

Practically all important meetings, conventions and expositions occur between Monday or Tuesday and Thursday or Friday. Under the new plan STEEL is able to report these events on Monday instead of on the following Thursday.

FOR these and other reasons the publishers are confident the new date of issue will enhance the value of STEEL to those whom it serves.

STEEL

For forty-eight years—IRON TRADE REVIEW
Published Every Monday

CLEVELAND - NEW YORK - PITTSBURGH - CHICAGO - LONDON

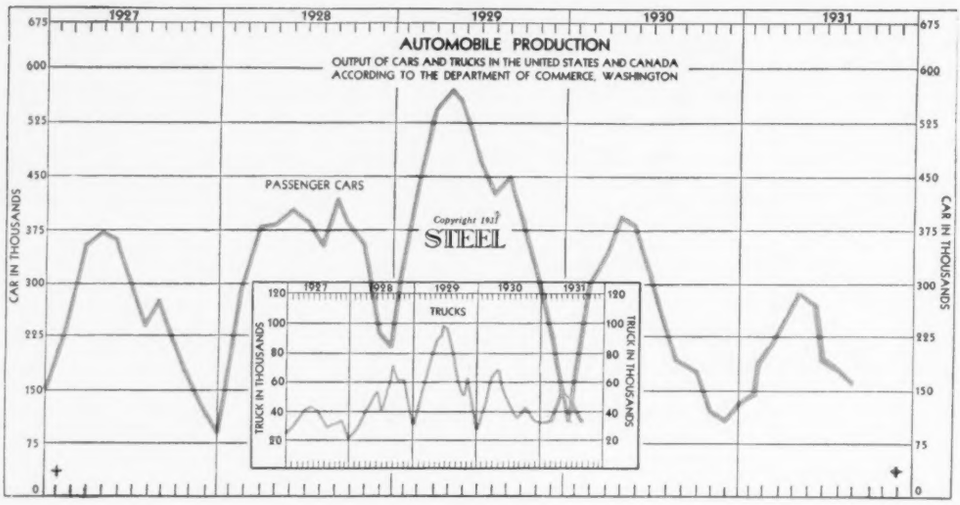
THE BUSINESS TREND

Passenger Cars 1930

Aug.	190,864
July	230,761
June	298,140
May	541,310

Trucks 1930

Aug.	43,296
July	44,960
June	51,466
May	94,940



Passenger Cars 1931

Aug.	158,851
July	186,258
June	214,898
May	282,096

Trucks 1931

Aug.	32,890
July	36,923
June	42,594
May	47,805

Outlook Is Better Now Than Six Months Ago

BUSINESS has crossed the portal of the final quarter without witnessing any tangible signs of marked seasonal improvement. The absence of the expected fall upturn is having an effect on sentiment which is similar in many respects to that caused six months ago when the spring upturn collapsed.

In reality, however, the situation today is more favorable than it was at the end of the first quarter. At that time few companies had launched the economy programs which since have proved so necessary. With the exception of a few sporadic adjustments in salaries nothing had been done with the wage problem. The business world in general was unaware of the impending upheaval in foreign finances and little was being done to avert it. American business was sadly unprepared for the numerous shocks which were due to come in the summer months.

Business, Drifting Along in Ignorance Earlier in Year, Now Is on Guard

Today a number of important economic adjustments are behind instead of ahead of business. The wage and salary problem has been attacked in most of the important industries except rail transportation and building construction. In the steel industry, the majority of companies are fairly well prepared to face the threats of this difficult period. The foreign situation is being attacked with greater intelligence and more precision. Equally gratifying is the agitation for economy in federal expenditures.

The advantage held by business today over its position at the end of the first quarter is simply this: Then few corrective measures had been launched; now the campaign of adjustment is well under way.

Industry must steel itself against the reports of third-quarter earnings, which will be generally disappointing as to actual amount but encouraging in that they will reflect a better showing relative to volume of business than earnings of the second quarter. Until operations return to 45 to 50 per cent of capacity it will be almost impossible for the average steel producer to make a profit.

Automobile Output Declining; Building Volume Up; Steel Unchanged

Meantime activity in the steel and closely allied industries has not changed appreciably. Operations continue to hover slightly above or below the 30 per cent mark. Automobile production still is declining gradually. The August figures compiled by the department of commerce show a total of 191,741 units for the United States and Canada against 223,181 in July. For eight months of 1931 output was 2,053,478 compared with 2,819,146 in the same period last year.

Building construction is exhibiting a fair upturn. Occasional large engineering projects—chiefly bridges — help maintain structural awards at fair volume. The first rail bookings are making their appearance, but they are for smaller tonnages than last year.

Prices of iron and steel continue steady, with observers watching closely to see what effect, if any, the recent wage action will have on quotations.

Stocks

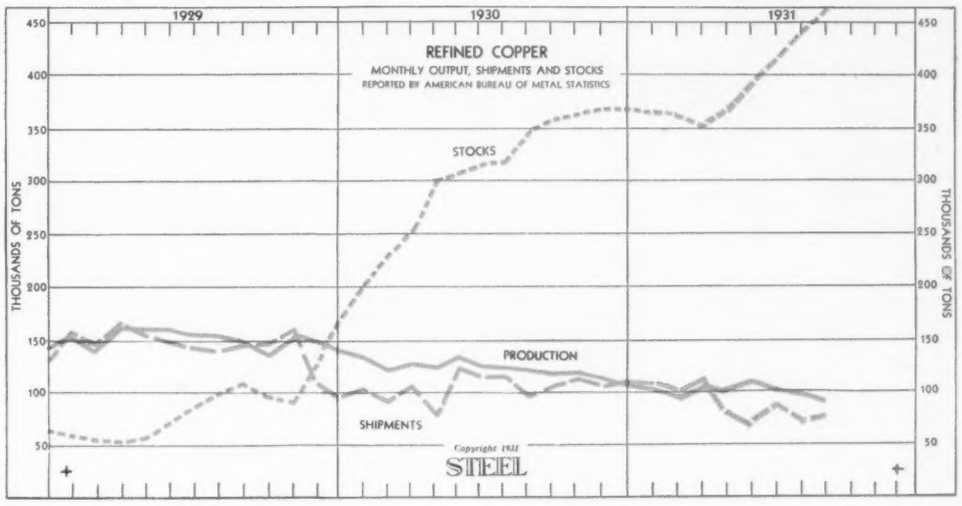
	Tons
Aug., 1931	455,775
July, 1931	440,417
Aug., 1930	347,688

Production

Aug., 1931	90,190
July, 1931	96,408
Aug., 1930	120,778

Shipments

Aug., 1931	74,832
July, 1931	69,465
Aug., 1930	95,129

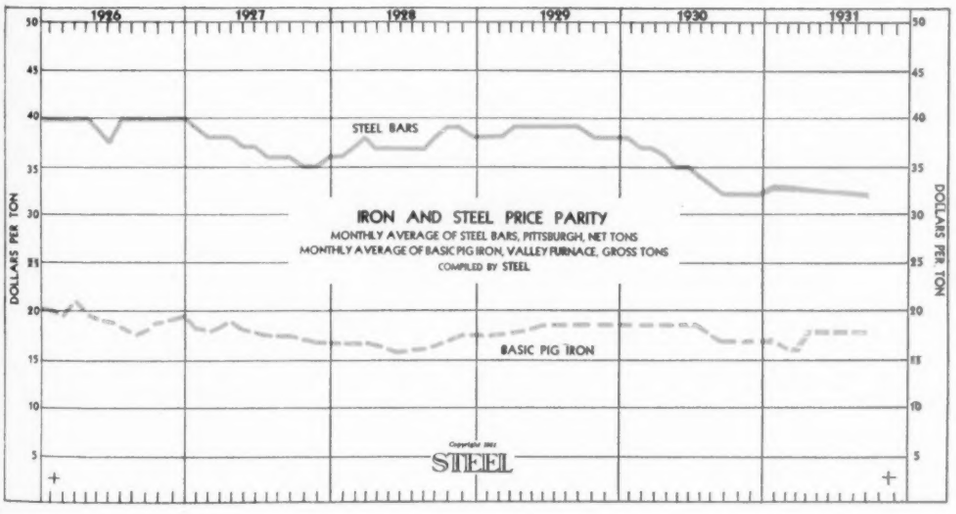


Copper Production Continues To Exceed Shipments; Stocks Are Higher

With quotations for copper holding at 7 cents, stocks continuing high and production and shipments at low ebb the outlook for improved conditions in this market is not bright. August figures compiled by the American Bureau of Metal Statistics showed a gain in shipments of refined copper of from 43,144 to 45,816 tons, a small drop in production and a gain of 15,000 tons in stocks. While a moderate increase in demand would restore the balance between output and shipment the present outlook is that the present ratio will continue with little change, with the result that September and October reports will show slight gains in stocks.

Behavior of Iron and Steel Prices Is More Orderly Than in 1921

Price movements during the present depression are surprisingly gradual and orderly. Today steel bars are at $32—the same as a year ago—although there have been slight fluctuations during the period. Basic valley iron is at $17 against $17.75 at this time last year. However, in the postwar depression, bars which were quoted at $65 in September, 1920, had fallen to $33 in September, 1921. Basic iron declined from $48.50 to $19.70 in the same 12-month period. The spread between basic and bar prices in September, 1920, was $16.50 and in September, 1921, it was $13.30. Today it is $15 compared with $14.25 last September.

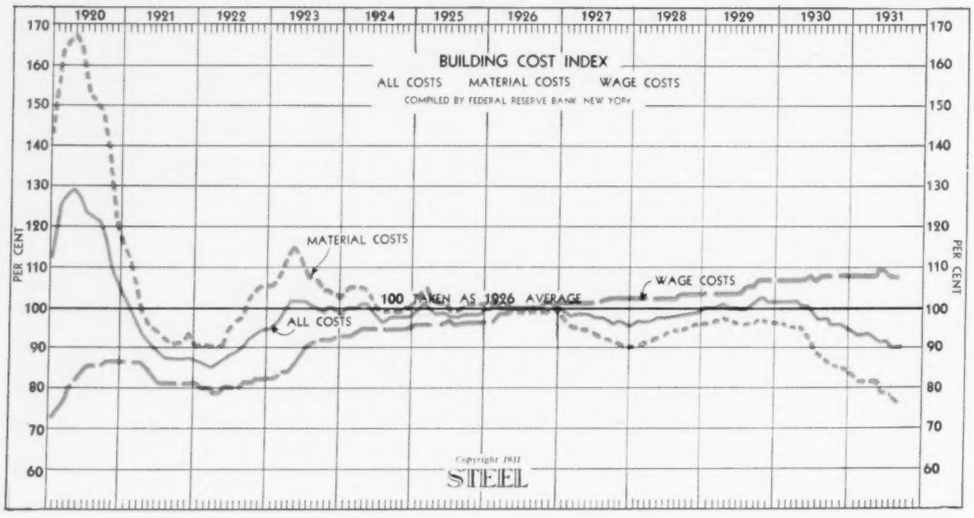


Steel Bars

	1931	1930
Sept.	$32.00	$32.00
Aug.	32.00	33.00
July	32.00	34.00
June	33.00	35.00
May	33.00	35.00
April	33.00	36.00

Basic Pig Iron

	1931	1930
Sept.	$17.00	$17.75
Aug.	17.00	18.00
July	17.00	18.20
June	17.00	18.50
May	17.00	18.50
April	17.00	18.50



All Costs

	Per cent 1931	1930
Aug.	90	97
July	90	97
June	92	98

Material Costs

Aug.	75	87
July	76	89
June	78	90

Wage Costs

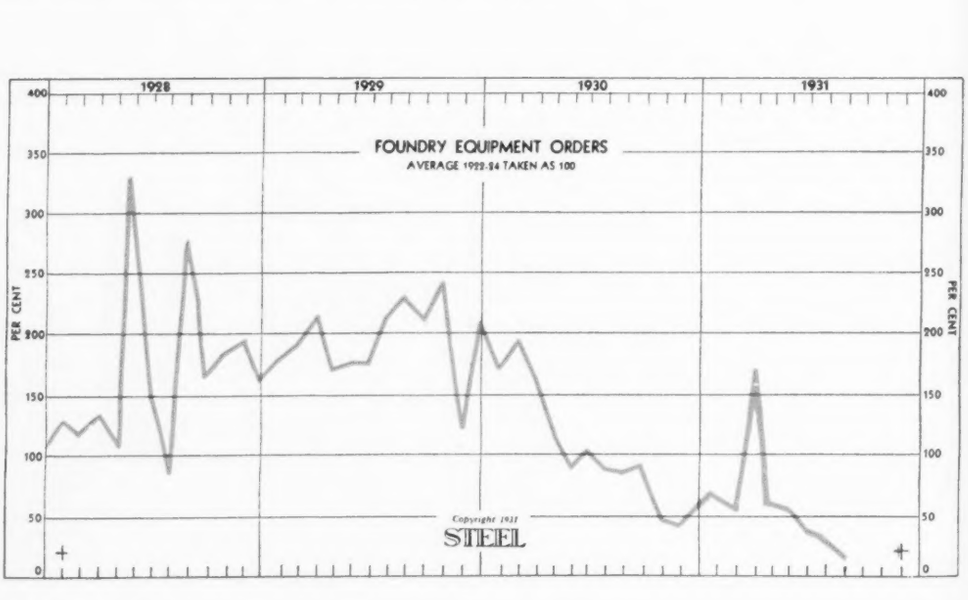
Aug.	108	108
July	108	108
June	109	107

Further Retreat Is Made in Cost of Building Materials

Once more in August the only change in building cost figures was downward. All costs remained unchanged at 90 and wages at 108, but material costs lost another point to reach 75. The wide variance between the relative positions of labor and material costs thus was further accentuated. The general index and its components being based upon 1926 figures as 100, the difference between 75 and 108 represents the opposite directions taken by the two factors. Total costs at 90 are the lowest since July, 1922. Material costs at 75 again set a new low for the index since compilations were started in 1919. Wage costs are at the same level which prevailed in the last half of 1930.

Foundry Equipment Orders Slump to New Low in August

Statistics for August compiled by the Foundry Equipment Manufacturers' association show that gross orders, shipments and unfilled orders have dwindled to the lowest point in many years. Gross orders index, which stood at 38.7 in July, dipped to 16.9 in August. The index of shipments, registering 55.7 in July, fell to 37.4 in the eighth month. Unfilled orders stood at 32.1 in August compared with 51.8 in the preceding month. The index figures are based on average monthly shipments for 1922-24 equals 100. The index of orders has been under 100 since June, 1930, except in March, 1931, when a spurt carried the index to around 175. A year ago gross orders were 85.2.



Per Cent

	1931	1930
Aug.	16.9	85.2
July	38.7	90.6
June	40.9	102.1
May	54.1	92.7
April	57.7	122.8
March	174.4	164.1

New Method Cuts Cost of Handling Sheet Steel

BY C. B. CROCKETT

Fig. 1—The first operation of picking up the 8000-pound bundle of sheet steel and moving it to the car door

THE modern automotive plant must consider every factor involved in a handling operation, including method of packing, storage space required, appearance of plant, injury to workmen, etc. The accompanying article describes a revision which one company made in the handling of steel sheets from car to storage. The result of installing a synchronized system using two types of mobile equipment was a reduction of cost of 85 per cent and a faster, neater, safer, handling operation.

ANY materials handling problem may be divided into three main factors—the material, the movement required, and the present method employed. A proposed change in any of the above will carry with it a resultant change in the operation and its cost. From a study of many mechanical handling installations, it has become apparent to the writer that changes in the first two factors, namely, the material and the movement required, are productive of new handling methods quite as often as a study of present methods with a view of reducing the cost. Once engaged, however, in a study of any particular handling operation it is impossible to separate the three factors and a change in one reacts upon the other two.

For example, the changing of the form in which steel sheet has been shipped definitely changes the method and equipment used in handling and perhaps will result in the employment of different storage areas and a different movement from car to the first drawing or shearing operation. Sheet steel has many qualities which make its handling both expensive and dangerous. It is heavy, sharp, and unwieldy, endangering workmen when manual methods are used; further, it is easily scratched when each sheet is handled separately. Both these factors increase the indirect cost of the movement. At a large Detroit plant making automotive rear end assemblies all these factors were given careful consideration before the installation of mechanical equipment for moving steel sheets from incoming cars to storage and to process. It was seen that the cost of 14 cents per ton, which was not unreasonably high, perhaps could be reduced if the unit could be increased in size and weight and kept in a form which would protect the individual sheets.

Cars might be spotted anywhere along the unloading dock and different sizes and weight of sheet had to be delivered to different points throughout the building. It was therefore apparent that some form of mobile equipment would prove the most economical. An electric lift truck seemed to be the most logical piece

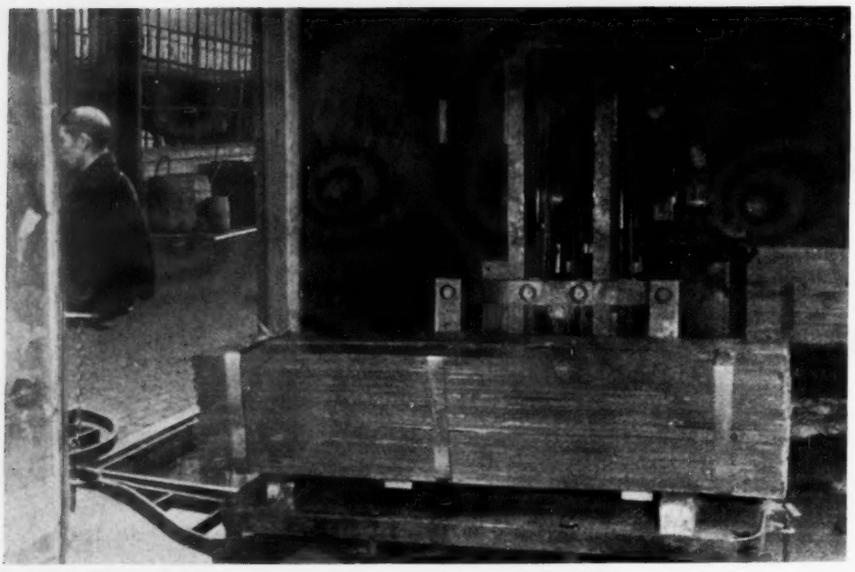


Fig. 2—As the load cannot be removed from the car by the lift truck, a trailer is backed in the car door and the load deposited thereon

of equipment but certain difficulties arose in connection with its use.

In the first place the sheets ran up to 96 inches in length and if placed lengthwise in the car they could not be picked up by the fork type of truck which was best suited to this work. If, on the other hand, they were placed crosswise to the car (and to the truck also, of course) they could not be taken from the car. At this point the men in charge of the study showed their resourcefulness when they broke down the operation into three parts: 1, the unloading of the car; 2, the movement to storage or production; 3, the unloading and storing of the sheet in the building.

Tractor-Trailer Method

"In parts 1 and 3," they reasoned, "the tiering feature of the lift truck is an essential as there is little horizontal movement. In part 2, however, we have a simple transportation problem. It is possible perhaps to keep the lift truck in the box car when loaded and let it deposit the load on some other piece of equipment for movement to destination."

For movement from car to storage area the tractor-trailer method was chosen with each tractor serving a number of trailers, although the loads of 8000 to 10,000 pounds meant that only one trailer would be handled at a time. The comparatively short haul, however, meant that little would have been gained in making up trains of loaded trailers. The increase in the size of the bundle of sheet necessitated the use of a larger fork truck than had ever been built but by placing the drive on the front wheels where most of the weight is carried it was possible to produce a machine capable of handling these weights.

The bundles are placed crosswise to the car on 2 x 4 or 4 x 4 timbers to permit the insertion of the forks under the load. Sufficient space is left at the center of the car so that the truck can enter the car, pick up the load, as shown in Fig. 1, and back to a point where the load is directly opposite the car door. At the same time, the load is raised to a height which permits backing the trailer in the door and the load is dropped on it. The forks are withdrawn from under the bundle, as shown in Fig. 2. The loaded trailer immediately is pulled from the car and the truck moves forward to pick up the next bundle and repeat the operation.

Having unloaded half the car the truck leaves the car to re-enter it facing the other way and repeat the operation for the other half. So well has this operation been synchronized that an 80,000-pound car can be unloaded in 15 or 20 minutes.

The steel having been moved to the storage area, the truck proceeds to this point and unloads the trailers, placing the bundles in their proper position on the floor or stacking one bundle upon the other wherever necessary, as shown in Figs. 3 and 4. The results of this system were not only a marked reduction in the cost of the operation but also a decrease in the losses due to damaged sheets, the elimination of accidents occurring to the men engaged in this work and a saving of 50 per cent in the space used for storage.

Cost Cut 85 Per Cent

The actual handling cost was cut from 14 cents per ton to 2 cents per ton which seems almost unbelievable when it is remembered that a first class freight house scarcely can move freight in and out for less than 60 to 70 cents per ton.

A reduction of 85 per cent in the cost of any handling operation is a credit to the men who devised the system but in this case it is especially noteworthy as the cost was low to start with. Probably the keynote of the success, achieved in this particular way, may be found in the high degree of functionalization of the equipment installed. Even if it had been possible for the lift truck to remove the load from the car and carry it to destination, the time lost in maneuvering in and out, the slower travel speed, the tieing up of more expensive equipment where cheaper would do just as well on movement from car to storage, all of these combined would perhaps have eliminated 50 to 90 per cent of the earning power of the mechanical equipment. Furthermore, the increase in the size of the unit handled up to a bundle of 8000 to 10,000 pounds materially reduced the number of operations per car.

Thus is evidenced again the fact that no one factor in a handling operation has an importance which excludes all the others and no one piece

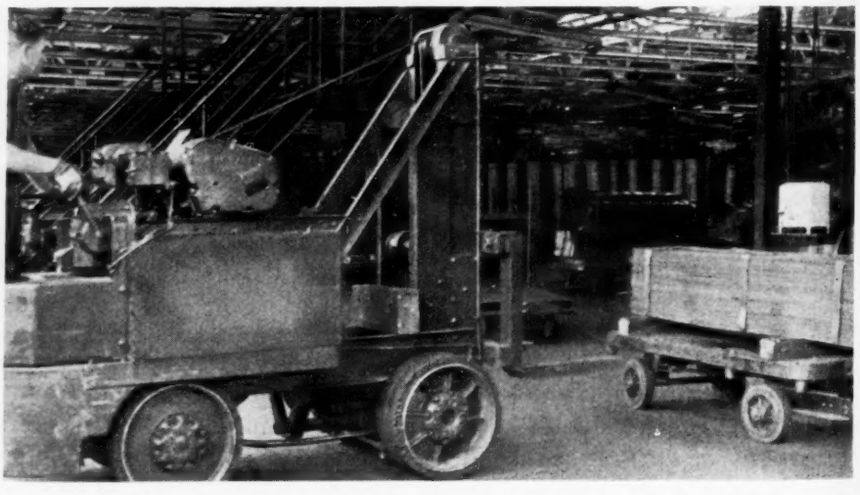
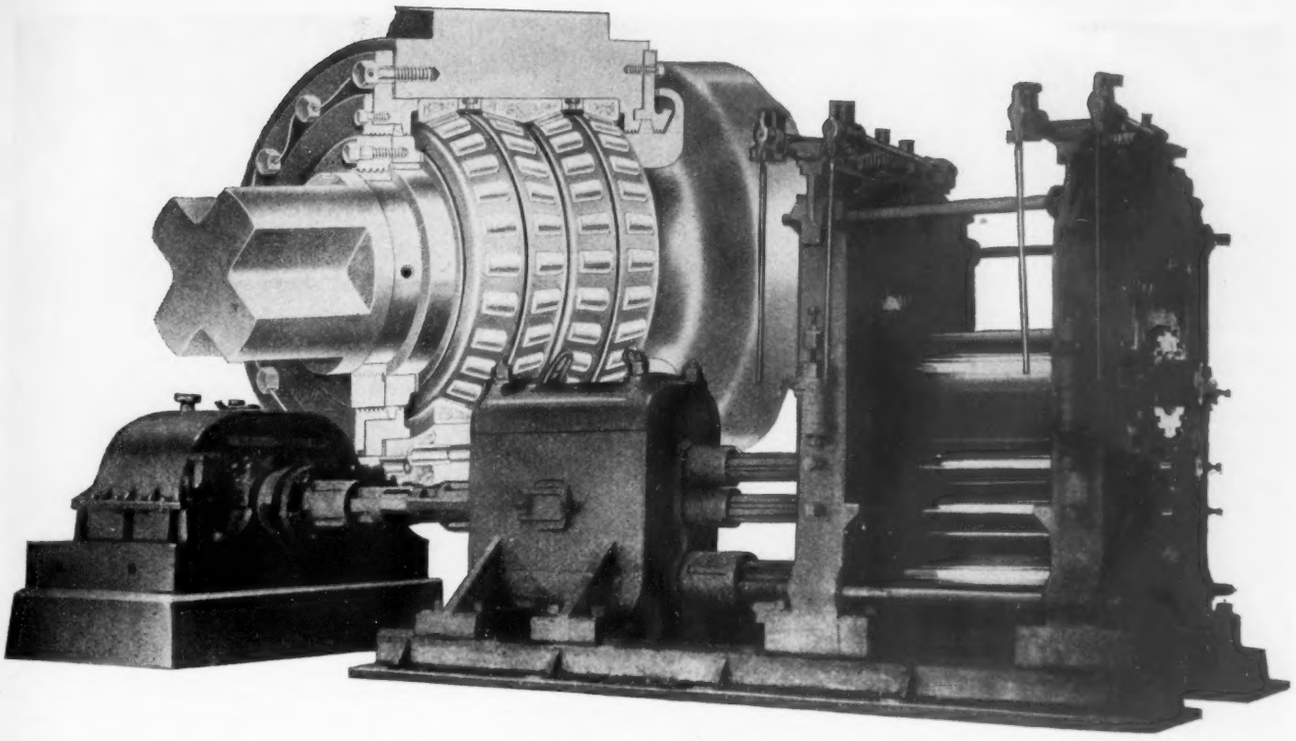


Fig. 3—Trailers are dropped at the storage area and unloaded by the fork truck as shown



Four years hard usage —still going strong

This 12″ and 30″ x 50″ cold mill was built by Mackintosh-Hemphill Company, Pittsburgh, and is installed in the plant of the Allegheny Steel Company, Brackenridge, Pa.

It comprises 4, four-high stands, each equipped with 4 Timken Bearings, 2 on the top back-up roll and 2 on the bottom back-up roll. Dimensions of bearings, 16.9375″ bore x 26½″ O.D. x 13″ wide.

The mill was placed in operation in May, 1927, and the same Timken Bearings have been on the job ever since.

That's dependability! Add to it the large power and lubricant savings made possible by Timken Bearings—then consider if you can afford to do without them in your mills.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

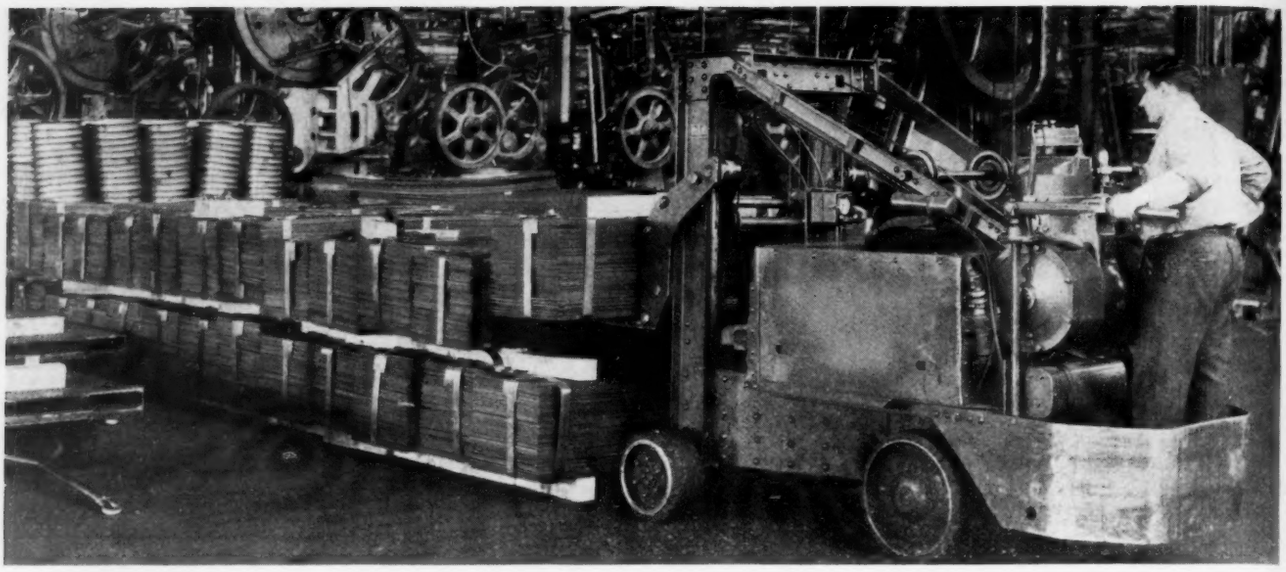


Fig. 4—Stacking the steel sheets near the presses after the trucks have removed the bundles from the trailers

or type of equipment is a panacea for high handling costs. The winning combination is the one where every factor has been given due consideration and the equipment is a combination in which each part of the process is handled by the type best suited to the purpose.

Steel Construction Group To Discuss Internal Problems

Tentative program has been announced for the ninth annual convention of the American Institute of Steel Construction Inc., to be held at Greenbrier hotel, White Sulphur Springs, W. Va., Oct. 27-31. Discussion will be concentrated upon the internal problems that confront the structural steel industry, according to Charles F. Abbott, executive director of the institute. The list of papers and subjects for open discussion is as follows:

Annual address by the president, Charles N. Fitts, New England Structural Co., Boston.

"What the Structural Steel Industry May Expect in the Future," by Charles F. Abbott, executive director, American Institute of Steel Construction Inc.

"What the District Engineers and the Bureau of Technical Service Have Accomplished for the Structural Steel Industry," by F. H. Frankland, director of engineering service, American Institute of Steel Construction Inc.

"Results to Date of Tests Being Conducted by the Technical Research Committee," by Aubrey Weymouth, chief engineer, Post & McCord Inc., New York.

"New Uses for Structural Steel," by Lee H. Miller, chief engineer, American Institute of Steel Construction Inc.

"The Possibility for Steel in Residences, Including Floors," by T. J. Foster, National Bridge Works, New York.

"Welding for Profits," by P. J. Horgan, General Electric Co., Lynn, Mass., and Robert E. Kinkead, president, Robert E. Kinkead Inc., Cleveland.

"What Practical Steps Can Be Taken Within the Industry To Improve Conditions." Open discussion.

"The Code of Trade Practices and Its Possibilities." Open discussion.

"A Standard Form of Contract." Open discussion.

"The Functions and Value of Local Associations." Open discussion.

"The Relation of Accurate Cost Accounting to Profitable Operation and Would the Exchange of Cost Information Based Upon a Uniform System of Cost Accounting Be of Assistance in Developing Better Profit Records?" Open discussion.

"The Value of Reliable Statistical Information for Intelligent Planning as Applied to the Structural Steel Industry." Open discussion.

System Utilizes Steam To Cool Railway Coaches

A new system of air conditioning and cooling for railway passenger coaches, employing steam from the locomotive as the refrigerating energy and water as the sole refrigerating medium, has been developed by the Carrier Engineering Corp., Newark, N. J. The elementary law of physics that water will boil or give off its heat at comparatively low temperatures when atmospheric pressure is reduced, is the basis of the development.

A tank partly filled with water is concealed in one end of the car. Steam from the locomotive is forced under pressure past an opening in the upper part of the tank, creating a vacuum within and causing the water in the lower half of the tank to boil at about 50 degrees. In boiling, the water gives off heat in the form of vapor which is drawn out of the tank by the suction of the steam —this results in lowering the temperature of the remaining water still further to about 40 degrees.

This cold water is circulated through coils concealed in the roof and over these coils air is drawn, cooled and dehumified and then circulated through the car by ducts. From the cooling coils, where it acquired heat in cooling the air, the water is returned to the tank.

Approximately 2000 cubic feet of conditioned air per minute is provided in each car, affording a complete change of air each minute. Refrigeration capacity is equivalent to about 5 tons of melting ice per 24-hour period.

Co-operating with the Carrier corporation in development and introduction of the system are the Safety Car Lighting & Heating Co., New York, and the Silica-Gel Corp., Baltimore.

Explains Thermomagnetic Phenomena in Steel

Steel, upon heating or cooling, undergoes characteristic magnetic transformations which are associated with corresponding structural transformations. The observation of these magnetic transformations with special reference to their interpretation in terms of the corresponding changes in structure or condition has been termed thermomagnetic analysis.

In a paper before a technical session of the American Society for Steel Treating in Boston, Sept. 21, R. L. Sanford of the bureau of standards, Washington discussed the characteristic magnetic phenomena which may be observed when steel is heated or cooled, and showed how they may be interpreted in terms of the corresponding structural transformations. Thermomagnetic analysis, on account of its great sensitivity, offers a means for studying some changes in the structure of steel which can be observed in no other way.

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THE
AETNA-STANDARD
ENGINEERING COMPANY
YOUNGSTOWN, OHIO

Better Steel Will Come with Maker-User Co-operation

INVESTIGATORS are not in accord as to the effect of nonmetallic inclusions in steel; many state a belief that these impurities are the chief causes of steel failures, others consider their influence as negligible. At any rate, for the past few years there has been a persistent effort to study this important problem and unmistakable progress has been made.

A most exhaustive research is being pursued by the Pittsburgh experiment station of the bureau of mines in co-operation with the Carnegie Institute of Technology and the Metallurgical Advisory board, and steelmakers are familiar with progress reports which have been issued from time to time.

Dr. C. H. Herty Jr., supervising chemist of the bureau, is directing this investigation and is regarded as the country's leading authority on inclusions. By way of recognition, therefore, he was named 1931 Campbell memorial lecturer of the American Society for Steel Treating and at the annual meeting of the society in Boston, Sept. 23, he presented a comprehensive review of results thus far obtained in the inclusion research.

General Conclusions Reached

According to Mr. Herty, four general conclusions may be drawn with regard to the present status and ultimate solution of the problem of nonmetallic inclusions. They are as follows:

1. Before the inclusion problem can be evaluated properly it is necessary that a series of alloys, free from sulphur and oxygen, be prepared, and that the physical properties of these alloys be accurately determined. This would serve as a base line for comparison of commercial steels and present steelmaking methods.

2. From available data on various physical properties, it appears that large inclusions are much more harmful than small ones. Most metallurgical departments properly inspect steel for cleanliness at 100 diameter magnifications.

3. Oxides and sulphides in solid solution are important when certain metallographic structures are to be avoided, or in some instances obtained. The difficulty of determining the amount of such solid solution material present in a steel has been, and will continue to be, an obstacle to the progress of this phase of steel treating and steelmaking.

4. The steelmaker supplies the consumer with steel to a given chemical analysis, combined, in many instances, with a physical, grain size, or cleanliness specification. Oftentimes the filling of one specifications will make it very difficult to meet another and it is on this point that the consumer should most certainly put considerable thought. A higher manganese specification will promote greater cleanliness and a higher silicon specification will give freedom from at least one type of ghost line. The consumer often is entirely to blame for the kind of steel he gets because his specifications do not allow the steelmaker to use available materials to the best advantage, and in some instances force him to use these materials to his own and the consumer's disadvantage.

Three types of inclusions are present in steel: (1) Those visible at 250 diameters magnification; (2) those invisible at 250 diameters; and (3) solid solution material.

Inclusions in finished steel may be traced to one of three sources:

1. In all steelmaking operations the liquid steel is in contact with refractory material, and many steel manufacturers feel that some of this refractory material may occasionally find its way into the steel through the scouring action in the runner of the furnace, the ladle lining, or the nozzle of the ladle. However, cases where these inclusions are present are comparatively rare.

2. Another sources of inclusions is nonmetallic matter brought into the steelmaking operation through the charge itself. In any steelmaking operation where scrap and pig iron are charged, such nonmetallics must be introduced. Generally speaking, the amounts of these impurities are small and, if the refining operations are properly carried out, a large percentage of them should be eliminated because the steel is in contact with the slag for several hours.

Open Hearth More Flexible

There is one important point in this respect in a comparison of electric furnace and open-hearth steel. In the electric furnace, the purity of the charge is of great importance because there is little or no action in the bath throughout the course of operation. In the open-hearth furnace, on the other hand, there is ample time and agitation for nonmetallic matter to be scrubbed out of the steel into the slag. Therefore, it is not necessary for the open-hearth operator to select his charge as carefully as the electric furnace operator. There is some evidence that nonmetallic matter tends to build up in a closed cycle in electric furnaces which use their own scrap. This has been thought to be particularly true of a nonmetallic which has not been mentioned up to this point, namely, nitrogen.

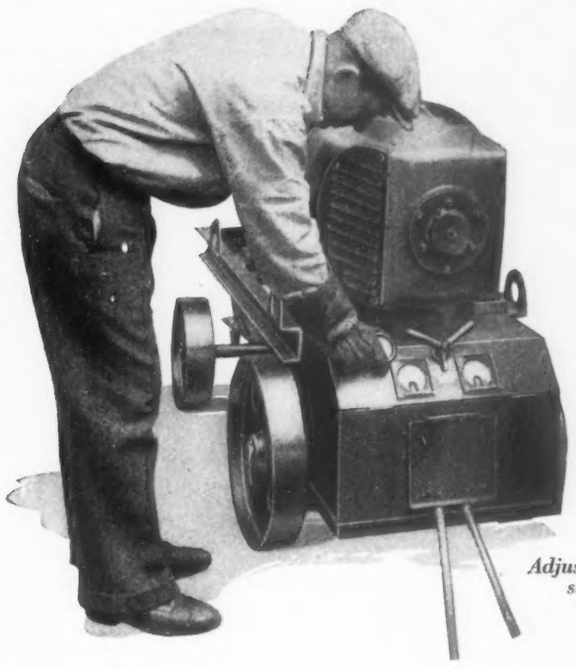
3. The third and most prolific source of nonmetallic inclusions is from the deoxidation process and it is here that the steelmaker's skill shows itself, and where the greatest advances in steel cleanliness and reliability may be made.

In all steels made in the open-hearth furnace, and in many cases in electric practice, it is necessary to eliminate carbon and other metalloids from the charge by oxidation. This oxidation is accomplished by the transfer of iron oxide from the slag into the steel and its subsequent reaction with the various metalloids. Before the steel can be poured into the ingot mold, it is necessary to eliminate part or almost all of the residual iron oxide so that the steel will be suitable for the service for which it is intended, and it is from the deoxidation of the steel that the great bulk of nonmetallic matter present in the steel is formed.

Oxidation of the steel depends on the degree of oxidation of the slag, the carbon content of the steel, and the bath temperature. An extensive investigation now in progress at the bureau of mines has shown that the iron oxide content of the slag is the controlling factor under operating conditions, and that the metal is generally from 60 to 80 per cent satur-

THAT the consumer often is entirely to blame for the kind of steel he gets because his specifications do not permit the steelmaker to use available materials to the best advantage and in some instances force him to use these materials to his own and the consumer's disadvantage, was the charge of Dr. C. H. Herty Jr., supervising chemist, Pittsburgh experiment station, bureau of mines, in presenting the annual Campbell memorial lecture of the American Society for Steel Treating in Boston, Sept. 23. Better steel will result, he says, when consumer and steelmaker co-operate more closely on chemical specifications.

DUPLEX VOLTAGE CONTROL

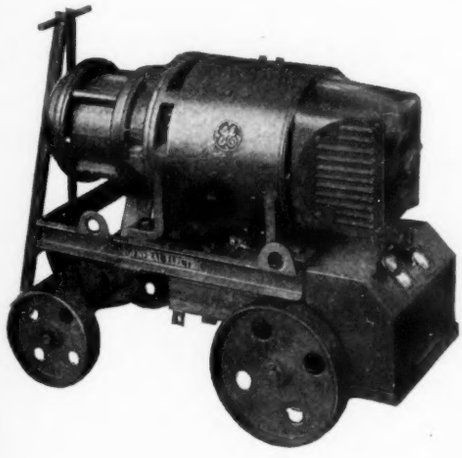


Adjust the voltage to suit yourself

THE NEW G-E ARC WELDER

Combines and excels all the best features of all the good welders now on the market... plus new features all its own.

1. Stable, flexible arc
2. Quick recovery ("pep")
3. Self-excitation
4. Spark-free commutation
5. Simple operation
6. Duplex voltage control
7. Dead-front control panel
8. Large, protected instruments
9. Light, compact, strong construction
10. Low center of gravity
11. A definite purpose for every ounce of material



THE new G-E arc welder gives the operator duplex voltage control — two voltage settings for one current value. A very important feature — and here's the reason: One operator believes he can get the best results with a high open-circuit voltage — approximately 85 volts, for example. Another operator, however, may prefer a low open-circuit voltage — approximately 75 volts, for example.

The new G-E arc welder permits a combination of current and voltage adjustment which will give each operator the current he *needs*, at the voltage he *prefers*.

And here's another advantage. Suppose the operator is forced to weld at a long distance from his machine. He sets the V-pointer for the required current and then adjusts the rheostat, not for the ordinary voltage corresponding to the current setting, but for a value enough higher to compensate for the voltage drop in the long leads.

Before buying any arc welder, investigate this advanced set through your nearest G-E office. Immediate shipment can be made from any of 20 G-E warehouses throughout the country.

530-114

GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

ated with iron oxide (with respect to the composition of the slag) at the time the heat is ready to be tapped. Obviously, the operator who controls as closely as possible the iron oxide content of the slag has a better chance of reproducing a metal of uniform iron oxide content when the heat is ready to be deoxidized than an operator who pays but slight attention to the slag and allows its iron oxide content to vary widely.

There are three ways of deoxidizing steel: (1) To partially deoxidize in the ladle and to complete the deoxidation in the mold; (2) to deoxidize entirely in the ladle; and (3) to deoxidize as far as possible in the furnace and to complete the deoxidation in the ladle. Most so-called quality shops employ the latter method. However, the first method implies as much quality as the third, provided the customer is satisfied.

Inclusion Size Important

Data obtained on tensile and impact testing in an investigation now in progress indicate that the physical properties of normally dirty steels do not vary to any marked degree with the total amount of inclusions present. The size of the inclusion appears to be of much more importance than the total number.

It has been the general impression of investigators in this field that inclusions do not necessarily lower the fatigue limit of a given steel, but that a dirty steel will give variable results and a clean steel uniform results on fatigue testing. The small amount of work which has been done at the bureau on this phase is in thorough agreement with this.

There has been some speculation as to the effect of inclusions on the corrosion resistance of commercial steels. A series of commercial steels was tested under the same conditions of submersion as laboratory steels in which the maximum amount of oxides as solid solution material and oxides visible under the microscope were formed. All these steels showed almost identical corrosion resistance under the same condition of testing.

There is, of course, a great deal of question as to the reliability of laboratory corrosion tests, but in any event steels ranging from very clean to extraordinarily dirty showed the same corrosion resistance in this type of test, and it may therefore be safely concluded that nonmetallic matter in steel has no effect on corrosion resistance of the material under the test conditions.

Contamination by Alloys

As to alloy contamination, there is one set of variables not often thought of, and that is the contamination of our plain carbon steels by residual alloys. In a survey of the alloy contamination of plain carbon open-hearth steel, carried on by the bureau of mines in co-operation with the open-hearth committee of the American Institute of Mining and Metallurgical Engineers, it has been found that there is an average combined total of Cu, Cr, Ni, Sn, and Va in plain carbon steel amounting to 0.15 per cent. Surely as large an amount of material as this must have its effect on some of the changes which take place upon heat treatment or hot or cold working. This is particularly true of tin, which hardens steel tremendously during hot working.

In the course of his lecture, Dr. Herty made frequent reference to a new method which has been devised for the electrolytic extraction of nonmetallic inclusions from plain alloy and certain low alloy steels. This method, to be described in an early issue of STEEL, has been found reliable and has made it possible for the investigator to correlate steel failures with inclusion content.

Experimental Plant To Make Electric Power with Wind-Operated Rotors

AN EXPERIMENTAL unit to generate electricity by means of wind-operated rotors is being erected at West Burlington, N. J., by the Madaras Rotor Power Co., Detroit, of which Julius D. Madaras is president. The experimental unit will occupy part of the vacant land adjoining the power plant of the Public Service Electric & Gas Co., which has executed a lease making the site available for the experiment over a period of six months time.

Erection of the experimental plant, by United Engineers & Constructors Inc., and Baldwin Locomotive Works, is the outcome of negotiations which have been proceeding since November, 1929.

Six of the larger utility companies are financing the project. These include the Public Service Corp. of New Jersey, Detroit Edison Co., Middle West Utilities Co. of Chicago, Standard Gas & Electric Co., United Gas Improvement Co. and the United Light & Power Co.

The wind-operated rotors are being modeled along the lines of the rotors on the rotor-ship which crossed the Atlantic from Germany several years ago. One mast now is being constructed at West Burlington and if it fulfils expectations, a plant of 15 to 20 rotor masts is to be constructed somewhere in the East. It is expected that each rotor mast will generate 1000 kilowatts in a 28-mile wind.

Plans for the plant provide that these rotor unts will be mounted on wheels on a circular track 3000 feet in diameter. Each rotor will be 20 feet in diameter and 90 feet high, made of duralumin and will revolve around a core of steel mounted on the track.

A generator attached to a trolley will supply the rotors with the initial impulse needed to revolve around the track. The rotors then will revolve on the principle of the wind-mill, the wind supplying the necessary power. It is said that a wind of six miles an hour is sufficient to operate the rotors.

Owing to the unreliability of the wind, the plans call for the use of the rotors in connection with plants operating by customary methods in order to insure uninterrupted service. The rotors, is successful, are expected to be of particular usefulness in the metallurgical industries, such as the production of steel, aluminum, carbide, copper, fertilizers, etc.

Gear Makers Announce Papers for Meeting

Costs, gear design and standardization will be chief topics for discussion at the semiannual meeting of the American Gear Manufacturers' association at the William Penn hotel, Oct. 15-17. Among papers which will be presented are the following:

"Cost Practice for an Industry," by J. B. Sehl, cost agent, American Drop Forging institute.

"Fallacy of Costing on an Average Basis," by J. Harper Jackson, Pittsburgh Gear & Machine Co., Pittsburgh.

"How Management Can Readily Be Informed from Our Cost Records as to the Profit or Loss Sustained on Miscellaneous Special Nonschedule Jobbing Orders," by John P. Wright, Foote Bros. Gear & Machine Co.

"Good Practice in the Manufacture of Speed Reducers," by P. C. Day, Falk Corp., Milwaukee.

"Practical Aspects of Tip Relief," by T. R. Rideout, Nuttall Works, Westinghouse Electric & Mfg. Co., Pittsburgh.

"Theoretical Aspects of Tip Relief," by R. E. Peterson, research laboratories, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"How the American Gear Manufacturers' Association Has Benefited the Gear Manufacturer," by F. W. Sinram, president, Gears & Forgings Inc., Cleveland.

T. W. Owen, 3608 Euclid avenue, Cleveland, is secretary of the association.

Galvanizing Pot Temperature Control Made Automatic

BY H. R. SIMONDS
Associate Editor, STEEL

A GALVANIZING shop engaged in custom or jobbing work must be prepared to handle with equal facility short runs of large pieces or long runs of small pieces. The chief problems in this type of plant, therefore, concern the cost of operating the galvanizing pots and the handling of material.

A Cincinnati galvanizer seems to have solved these problems successfully with the recent installation of pots, equipped with automatic temperature controls. This company, the Witt Cornice Co., galvanizes all of its own products, and and in addition, conducts an extensive commercial galvanizing business, with the result that the pots must operate under a wide range of conditions. In spite of the fact that the pieces to be coated vary in weight from a few ounces to 6 tons and in shape from solid forgings to sheet steel cans and tanks, the company has been able to reduce its production costs through use of the automatic equipment.

Burners Are Motor-Controlled

Two large pots manufactured by George Gilbert, Bridgeport, Conn., and equipped with gas burners by the Surface Combustion Corp., Toledo, O., were installed. Pyrometer controllers, registering the temperatures of the pots through thermocouples control the motor-operated burner valves. These controllers, one of which is shown in Fig. 1 were manufactured by the Bristol Co., Waterbury, Conn., whose engineers developed the system of control.

Although the two pots are similar, one has a capacity of 50 tons of metal and the other 30 tons. The smaller is shown in Fig. 2. The parts to be galvanized, depending upon their size and nature are placed in baskets or cradles which are swung over the bath by an overhead trolley and lowered by hand tackle into the metal. In the case of wire fencing, however, special machinery is used. The wire mesh is unrolled from its original roll, passed under and around a roll at the bottom of the galvanizing kettle, and then is rewound on a roll machine at the opposite side of the kettle.

As stated previously, the automatic control feature is a fairly recent development but sufficient data have been taken by E. L. Tait, superintendent of the Witt plant, to afford a comparison between non-automatic and automatic operation. In addition to the direct labor saving many other advantages have resulted from the control. Ordinarily the instrument is set for the desired temperature and this is held within about 25 degrees plus or minus regardless of the condition of operations. When new material is charged, the temperature tends to drop rapidly, but the pyrometer control device operating the valves of the gas burners is sufficiently sensitive to counteract the drop within 2 or 3 minutes and thus a continuous and uniform galvanizing is assured.

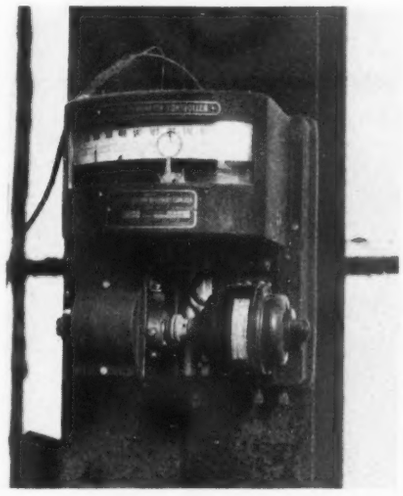


Fig. 1—The pyrometer controller has adjustable high and low temperature contacts which operate the burner valve mechanism

The automatic control feature is found to be particularly advantageous during periods when the pots are shut down, for example, overnight or during intervals between jobs. The control may be set at a temperature just high enough to prevent freezing of the metal and this is then maintained constant with the pots ready to be jumped up to operating temperature upon short notice. This effects a saving in time by avoiding the necessity of remelting the entire bath of metal and a saving in money through reduced fuel consumption. Mr. Tait is authority for the statement that the automatic control feature is responsible for a saving of not less than 10 per cent in dross and also that the uniform temperature has resulted in a marked extension in the service life of the pots.

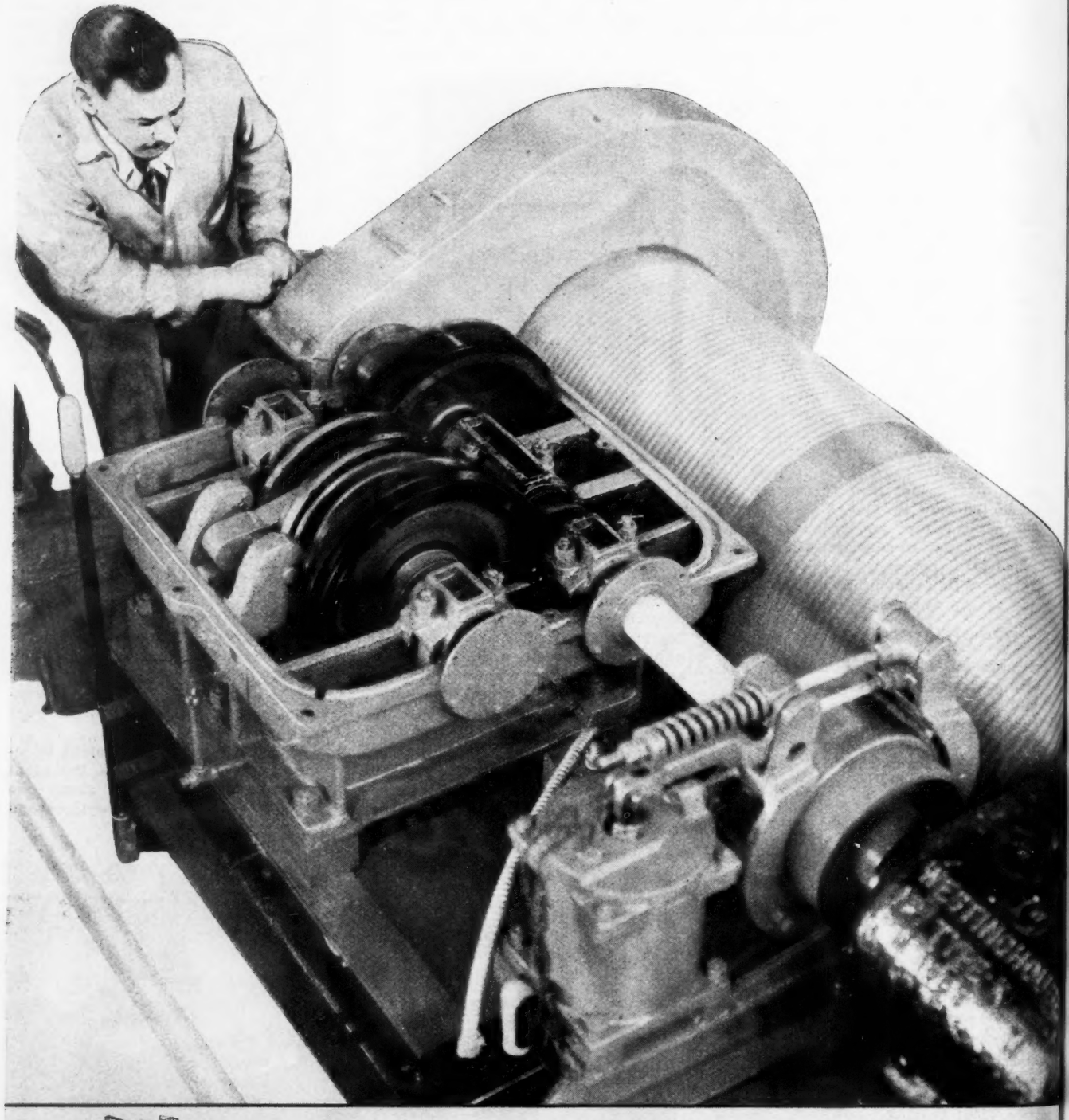
Temperature Range Set

Actual operation of the pyrometer controller is by means of electrical contacts set at the desired high and low points on the indicator which, working through a relay, operate a motor to control the valve position. The thermocouple, which is electrically connected with the instrument and which operates the pointer, is suspended over the edge of the pot and immersed in the molten zinc at about the center of one of the long sides. Its position, however, may be changed and this is done occasionally in connection with different classes of work.

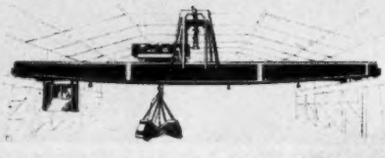
The galvanizing department is located on the top floor of the plant with windows extending along one full side to give ample daylight and

Fig. 2—A view of the 30-ton pot. Because of wide variety of the material galvanized, handling equipment is relatively simple

Watch these Gears



Niles Gantry Cranes
from 1 ton to 150 tons.



Niles Grab-Bucket Cranes
to meet every need.

Niles Electric Traveling Cranes
from 5 tons to 450 tons.

Niles Wall Cranes
from 1 ton to 10 to

with both window and floor ventilation.

The products galvanized range from small chain links and hardware, to 6-ton tanks. The general run which accounts for about 50 per cent of the total is on ash cans and garbage cans. The balance is made up of pole line hardware, sheets, wire mesh fencing ranging up to 12-foot width, and castings. Slaughter house hardware also is a large item. The largest piece of work to date was a 6-ton cylindrical tank.

Locomotive To Do Work of 1000 Men In Maneuvering Navy Airship AKRON

WHEN the recently launched navy airship AKRON is transferred to its Lakehurst, N. J., base, it will be maneuvered about in front of the dock with the aid of a new heavy locomotive, specially constructed for the work, and claimed capable of doing the work of a ground crew of 1000 men. The locomotive, designed and built by the H. K. Porter Co., Pittsburgh, will operate on a circular track around the mooring mast in front of the ship's dock.

Shown in the illustration below, the locomotive will pull a large beam to which the stern of the airship is held by yaw lines, until the ship assumes a position parallel to the dock. Weight of 264,000 pounds and drawbar pull of over 60,000 pounds assure ample capacity to handle the giant craft. Drive is through eight 40-inch wheels; length 39 feet; width 13 feet; and maximum height 6 feet, a restriction imposed by navy specifications.

Hydraulic Drive

To provide smooth, powerful movement the drive mechanism is a hydraulic motor, actuated by a hydraulic pump and a 250-horsepower 8-cylinder gasoline engine. The locomotive can attain any speed from 0 to 100 feet per minute in either direction, and has a second gear to give a speed of about 7 miles per hour. Slow speeds are possible by means of single reduction gears between the hydraulic motor and main driveshaft. Gears and shafts are of a specially heat treated alloy steel, with all shafts mounted in roller bearings.

The locomotive rests on the drivers through springs and equalizers. Frames are of solid steel slabs, each weighing over 22,000 pounds, the slabs being rolled at the Homestead, Pa., plant of the Carnegie Steel Co. Bumpers also are made of solid steel slabs. Braces between the frames are unusually heavy, one weighing over 26,000 pounds. These weights are essential for proper traction under the heavy drawbar pull.

At each locomotive bumper is attached a hydraulic tension meter unit. The hydraulic chambers on these tension meter units are filled with oil and when the full tractive force is developed by the locomotive, a pressure of 2300 pounds will prevail in these chambers. From the hydraulic chambers of each tension meter unit a small high-pressure pipe leads to a gage on the instrument board at the operator's stand, which indicates the drawbar pull of the locomotive. Thus the tension meter units act as safety measures to show the operator at all times the drawbar pull being exerted. In case the pull on the airship should become greater than the allowed maximum, the operator can release the tension simply by reversing the locomotive.

To Receive Grasselli Medal

Dr. L. V. Redman, vice president and director of research, Bakelite Corp., Bloomfield, N. J., has been awarded the Grasselli medal for 1931, according to an announcement of the American section of the Society of Chemical Industry, a British organization.

Dr. Redman, who is president-elect of the American Chemical society, was chosen recipient of the annual award as a result of his extensive industrial studies, the results of which were embodied in a paper on "Cost of Research and Its Apportionment," read before a meeting of English, French and American chemists and chemical engineers in December, 1927.

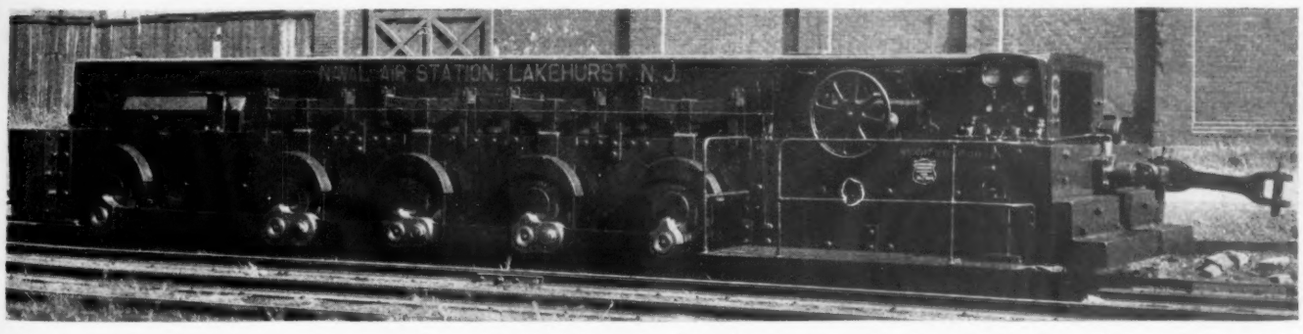
Develops Heavy-Duty Roll Of Chilled Cast Iron

Thomas Prosser & Son, 15 Gold street, New York City, American representative of the Krupp Works, Germany, now are supplying a new heavy-duty chilled cast iron roll recently developed by the Krupp Works. This roll, known as Gwk 100, is a product of the electric furnace, has a special alloy content and scleroscope hardness of 90 to 95.

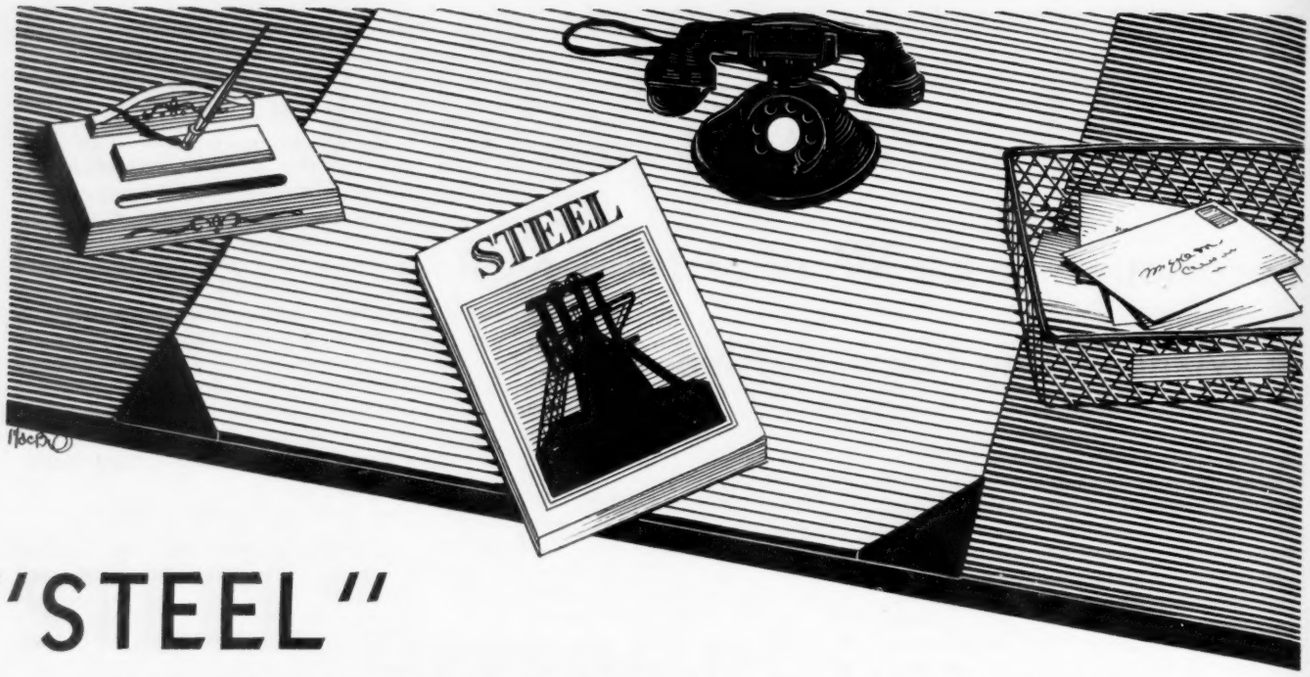
The close grained and compact structure is said to resemble closely that of a steel roll. The surface can be polished easily and economically to a high finish which will produce the highest grade of finished surface on rolled material, such as highly finished sheets of aluminum, brass, nickel, etc. The roll is suitable for cold finish rolling of sheets of the most varied metals and alloys, as well as for the manufacture of automobile body sheets.

Unusual depth of hardness is a feature. Penetration of the chill is not limited to the tempering zone, but reaches nearly to the core of the roll with only slight reduction in hardness.

The new roll is said to overcome the disadvantage of reduced tensile strength with increasing hardness which makes the roll brittle and delicate. Breakage, therefore, is greatly reduced. There is also less sensitiveness to temperature changes and local overheating because of slipping of the material in rolling.



This gasoline-hydraulic locomotive weighs 132 tons and exerts a drawbar pull of over 30 tons. It has been specially built for use in maneuvering the new navy airship AKRON *at its Lakehurst dock*



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New Books Worth Reading

SCIENCE ◆ ECONOMICS ◆ BUSINESS

Alloys Are Listed in British Publication

Metals and Alloys; cloth, 136 pages, 5¾ x 8¾ inches, published by the Louis Cassier Co. Ltd., London, Eng., and supplied by STEEL, Cleveland, for $2.50, plus 15 cents postage and in Europe by Penton Pulishing Co. Ltd., Caxton House, Westminster, London, for 10s, postage extra.

This book gives an excellent indication of the progress in the science and practice of metallurgy during the past ten years. The previous edition of the book contained the percentage compositions of some 500 metals and alloys, while the present book lists about 3500 alloys. The listing is alphabetical, beginning with accumulator metal (which in this country would be storage battery lead), and ending with ziskon, a metal containing 40 per cent zinc and 60 per cent aluminum. In many instances the alloys are listed under a collective head, and also under a trade name. For example, under acid-resisting alloys the name ferron appears, and it is found also in its proper place alphabetically.

While the book is entitled *Metals and Alloys*, the headings of the tables giving the compositions are "Percentage Compositions of Nonferrous Alloys" which would lead one to believe that only nonferrous alloys are listed. However, the selection of the title is not quite correct, because while most of the alloys mentioned are nonferrous, a number containing 50 per cent and over of iron are mentioned such as Calite, Krupp V2A steel, etc.

◆

Directory of Steel and Metal Industries

Standard Metal Directory, cloth, 778 pages, 6 x 9 inches; by Atlas Publishing Co. Inc., New York. Supplied by STEEL, Cleveland, for $10, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 50s, postage extra.

This is a series of directories, classified according to products, arranged geographically and alphabetically, covering steel and nonferrous metals as to producers, refiners and manufacturers.

This is the sixth edition, brought up to date and with added features. Some of the subjects covered are: Foundries, rolling mills, nonferrous smelters, ingot manufacturers, blast furnaces, cable and wire manufacturers, die casting manufacturers, importers and exporters of steel, iron and metals, smelting works, new and relaying rails, producers and sellers of copper, steel and iron scrap dealers, tin plate mills, solder manufacturers.

Much information is given as to equipment, materials consumed and classes of products.

◆

Statistics of Metals Compact in Form

Metal Statistics, 1931; twenty-fourth annual edition; cloth, 552 pages, 4 x 6 inches; published by American Metal Market, New York, and supplied by STEEL, Cleveland, for $2, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 10s, postage extra.

This annual issue is identical in form with its predecessors and covers statistics on ferrous and nonferrous metals for 1930 and preceding years. It includes production, consumption, imports, exports, stocks, average prices and similar information. In the present edition several tables have been added to make the information more complete.

◆

Making Foundry Sands Fit the Purpose

Testing and Grading Foundry Sands; paper, 160 pages, 6 x 9 inches published by American Foundrymen's association, 222 West Adams street, Chicago; supplied by STEEL, Cleveland, for $3, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, for 15s, postage extra.

Following the recommendations of the committee on molding sand research, the American Foundrymen's association, has adopted a set of standards and tentative standards for the testing and grading of molding sands, which are presented in this volume. The book contains 47 illustrations showing testing methods and micrographs of various types of sand. Part of the book is devoted to the historical development of foundry sand testing and control and gives the names of the many individuals who have played an important part in securing the data now available.

Following the introduction, standard and tentative procedures are given for sampling and for determination of moisture; permeability, both green and dry; green and dry sand strengths; fineness; and chemical analysis. Other determinations for which instructions are given include green sand mold surface hardness; dye adsorption qualities; sintering test; core tests; and grading classifications. A bibliography is included in the last section.

◆

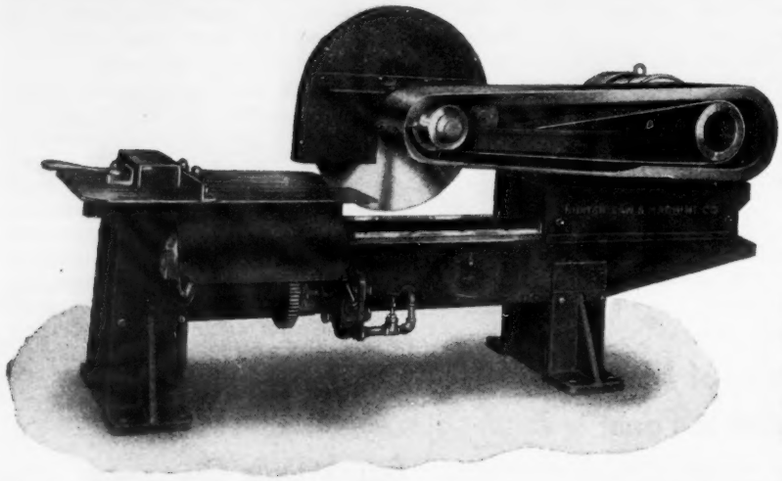
British Dole Discussed And Dangers Traced

Unemployment Insurance in Great Britain, by Mary Barnett Gilson; cloth 6 x 9 inches, 560 pages published by Industrial Relations Counselors Inc., New York, and supplied by STEEL, Cleveland, for $5 plus 15 cent postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, for 20s, postage extra.

The British unemployment benefit plan, originally put into effect in 1911 as an insurance system under which compensation was to be paid to contributing laid-off workers on an actuarial basis, today presents the spectacle of one of the greatest social-economic experiments ever attempted, hovering on the brink of a crisis and which, unless rigorous measures are taken to control its expenditures, threatens to impose an insupportable burden upon the national treasury .

The chief reason for this situation is that the actuarial limitations of the insurance plan have been sacrificed, step by step, under the tremendous pressure of postwar industrial readjustments and prolonged business depression, to humanitarian considerations and political exigencies.

The author traces the history of the development of various relief measures dating back to the Elizabethan statute of 1572 and shows the manner in which public charity responsibility was assumed first by the trade unions and then passed back to the government. Various measures of unemployment prevention and reduction are analyzed and the benefits as well as the evils of unemployment insurance are set forth.



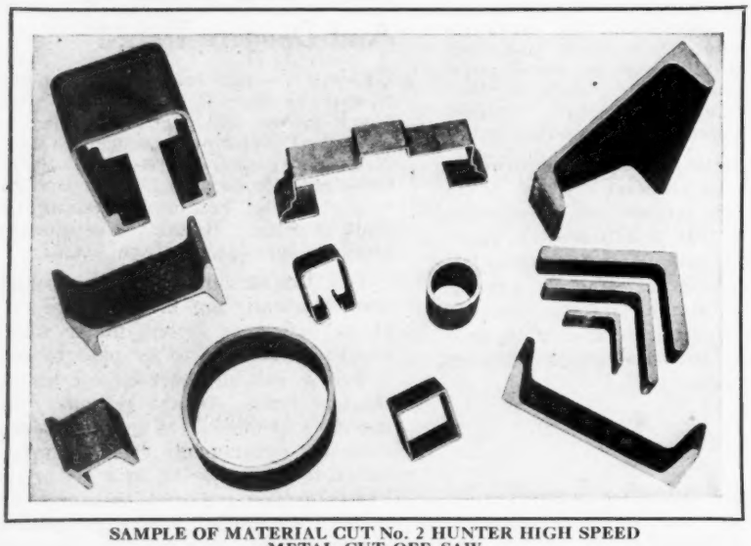
HUNTER

No. 2 High Speed Cut Off Saw

The No. 2 High Speed Metal Cut Off Saw was developed for the rapid cutting off of structural and special shapes, pipe and similar shapes.

Although the standard machine is mounted on a solid base, as shown, the machine can be mounted on a turn table, permitting the machine to be swung at any desired angle. This is particularly convenient for making angular cuts on beams 50 and 60 ft. long.

We show a typical group of shapes cut on the Hunter No. 2 Cut Off Saw.

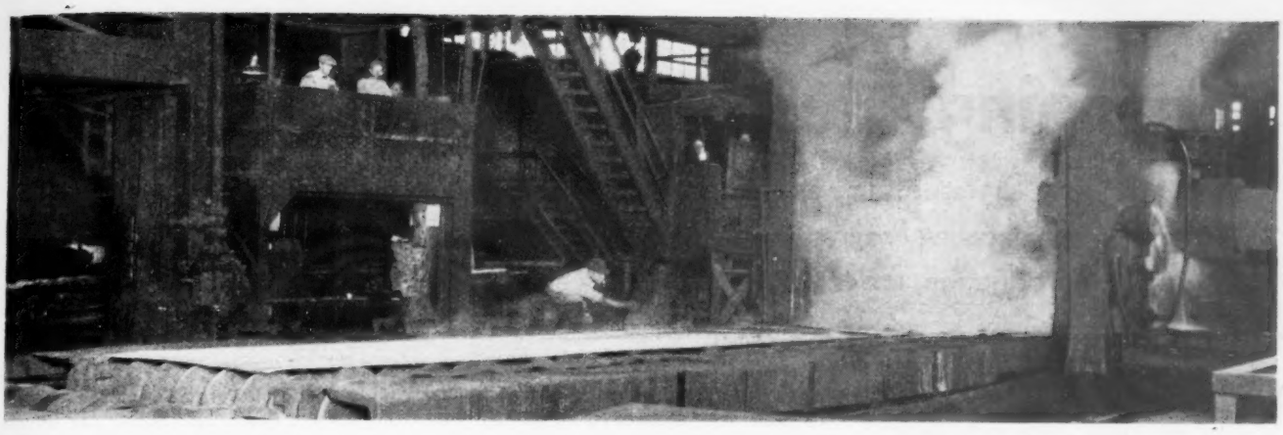


SAMPLE OF MATERIAL CUT No. 2 HUNTER HIGH SPEED METAL CUT-OFF SAW

We also manufacture: Inserted Tooth Saws . . Circular Milling Saws . . Hot-Cold and Tube Saws . . Pneumatic Hammer Rivet Sets .. Chisel Blanks . . Hardened Steel Specialties.

HUNTER SAW AND MACHINE CO.

5656 BUTLER STREET, PITTSBURGH, PENNA.



PROGRESS IN STEELMAKING

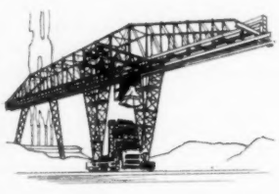
IMPROVEMENT in the lubrication of rolling mill spindles has effected a decrease of 65 per cent in their cost, plus the saving in power, at a plant in the Chicago district. A grease compartment around the coupling box is filled partly with wool yarn and then with a lubricant of about the consistency of 600W transmission grease from a pressure gun. The lubricant is fed through a hole to each wabbler of the coupling box. A similar system of lubrication is employed by the same company on its tight-fitting mill universal spindles.

♦ ♦ ♦

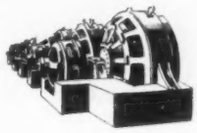
Wire, one-fifth the thickness of human hair, provides the filament for a new type electric lamp. A diamond serves as the die through which the wire is drawn. The wire is made of tungsten and a pound stretches 144 miles.

♦ ♦ ♦

Many checker failures in open-hearth practice have been attributed to the quality of the original refractories, when as a matter of fact they were due to the failure of checkers whose refractory quality had been lowered by their repeated use in producer gas chambers, according to experiments conducted by a prominent ceramic engineer.



A NEW electrical device is being employed by two steel companies in the Cleveland district for protecting outdoor cranes against destruction by winds. An anemometer, which practically is a direct-current generator with the armature revolved by wind pressure, is used for indicating the velocity of the wind. This is connected to a relay set to operate at a maximum safe velocity. If the wind exceeds this value, the rail grip controller automatically is cut out and cannot be operated, whether the operator disregards his meter or not.



SELF-SYNCHRONIZED motors, known as selsyn and first used for operating the locks of the Panama canal, now are employed for controlling blooming mill operations. The dial, formerly used for indicating the position of the control levers, becomes the actual control instead of simply serving as a marker for the control. The operator twirls the dial to the correct place. The rolls, controlled by the other motor of the selsyn set, promptly assume the proper spread, and the steel can be rolled immediately.

♦ ♦ ♦

A new type roll heater is being used by a sheetmaker in this country which employs the induction method of heating. The unit is made up of copper bar with the undersides connected by flexible leads. The heater is installed in about 5 minutes without disturbing any of the mill fixtures. From 50 to 60 kilowatts of 100 to 120-volt current is consumed in raising the temperature of a pair of 42 x 30-inch rolls to 572 degrees Fahr. in 12 hours. The temperature of the rolls is raised without producing a steep temperature gradient between the surface and center and is built up in the correct proportions from the middle to the ends, accurately copying the normal heat distribution and bringing the roll to correct contour for rolling sheets.

♦ ♦ ♦

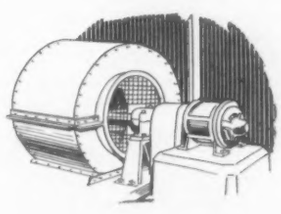
A monthly record showing the kinds, amount and total cost of lubricants and the tonnage of steel rolled is found of great benefit in the plant of one large steel company. Graphic charts are made from the record showing lubricant consumption and provide a check for any unwarranted increase. A cost of 6 cents a ton of rolled products shipped indicates efficient lubrication practice.

♦ ♦ ♦

A test recently made on the use of crushed ore at a blast furnace in the Birmingham district is said to have accomplished a reduction of 350 pounds of coke per ton of iron produced, a 10 per cent increase in tonnage and no serious increase in the production of flue dust.

♦ ♦ ♦

Metallurgists at the bureau of mines experiment station, Pittsburgh, not only have found that high-silicon spiegels having ratios of manganese to silicon of 4:1 up to 8:1 are rapid deoxidizers of steel, but that the products of the deoxidizing reactions rapidly are eliminated from the steel.



STEPPING up the speed of ventilating fans when the air is saturated with smoke or gas and decreasing the speed of fans when the air is clear is controlled in one large plant by the use of the photoelectric tube in conjunction with the thyratron tube.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Weldability of Steel

Factors which affect the weldability of steel, discussed by W. E. Stine, in Journal of the American Welding Society, September 1931, *p.* 22, 4 *pp.*, 10 *illusts.*

Gas holes are not formed to any appreciable extent where the arc is in an oxidizing atmosphere. High-quality arc welds can only be made with a shielded arc. Gas holes become an important factor in such welds. Slag holes or depressions are caused by nonmetallic inclusions in the steel. These holes can be eliminated by using a slag-forming flux of low melting temperature which will combine with the slag of the steel forming a new slag having its melting temperature below that of the steel. Aluminum oxides or any other nonmetallic inclusions in steel which has its melting points between the melting point and boiling point of steel will cause slag holes, or pits, in the weld metal of electric arc welded steel unless it is fluxed with some other material which lowers their freezing point below that of the steel. Aluminum, silicon, manganese or any other deoxidizers having gas solvent properties which are present in excess of the quantity necessary for chemical equilibrium with the oxygen present in the steel at a temperature slightly above the temperature of solidification may cause the formation of gas holes in the weld metal of electric arc welded steel.

—STEEL, 10-5-31

Sheet and Strip Steels

A comparative study of low-carbon sheet and strip steels produced in wide thin gages as utilized for difficult stampings, discussed by E. S. Lawrence, at the annual meeting, American Society for Steel Treating, Boston, Sept. 21-25, 1931, 21 *pp.*

Some of the most common defects and limitations encountered in the manufacture of strip steel for this particular and ultimate use are contrasted with some of the more common defects attributed to the manufacture of sheet steel. The adaptibility of strip steel as made on a continuous 4-high mill as breakdowns to be used on a conventional 2-high sheet mill is emphasized. The influence of deep-drawing strip steel on the market formerly held by sheet manufacturers is discussed. And the rapidly improved methods of sheet rolling defended. The various physical standards as now are demanded by the consumer of sheet and strip steels are criticized. Emphasis is laid to better co-operation between manufacturer and consumer as regards their research and development, the author indicating that close co-operation will be extremely beneficial to both.

—STEEL, 10-5-31

High-Chrome Steels

Machining, press-working, forging, casting and welding this grade steel, discussed by C. B. Lord, in American Machinist, Sept. 17, *p.* 455, 3½ *pp.*, 3 *illusts.*

The essentials of production machining seem to be about the same as for medium-carbon steel, as far as feed and speed are concerned. Both the side clearance and top rake of lathe tools should be increased. Some recommend a rake of 15 degrees. Sharpness of tools is essential, and they must not be allowed to dwell without cutting. The latter is true of milling, drilling and turning. High-chrome steels require about 10 times as much labor to polish as ordinary steel. Usually on high-chrome sheet metal, there are three grindings, using No. 60, 120 and 200 grain abrasives. High-chrome steels roll and forge about like the high-carbon or nickel steels having the same percentages of carbon. The actual labor and material cost per foot of weld on thin oxide-resisting sheets should average from 40 to 70 cents. For acid resisting there is still a question whether welding can be used or not.

—STEEL, 10-5-31

Blowpipe for Cutting

Use of the cutting blowpipe for repairing or replacing platework, discussed in Oxy-Acetylene Tips, September 1931, *p.* 152, 1 *p.*

The procedure to be followed in removing rivets from old platework is as follows: First, cut a slot in the rivet head from the top of the button to the underside of the head similar to the screw driver slot in a round head screw. This operation is carried on in the customary manner for cutting plate. Then, as the cut nears the plate, draw the nozzle back at least 1½ inches from the rivet. The nozzle should be raised as the bottom of the slot is being reached and just before cutting starts at the base of the plate. This is important. By the time the slot is cut the entire head will be preheated to a cutting temperature. When the slot just reaches the plate swing the nozzle through a small arc. This slices off half of the rivet head. Immediately swing the nozzle in the opposite direction, removing the other half. This procedure permits the oxygen to scatter slightly before it strikes the rivet and prevents the jet from breaking through the layer of scale that is present between the rivet head and the plate. As a result the button drops off flush without damage to the base metal. If the nozzle is not withdrawn, as indicated, the force of the oxygen jet may pierce the film of scale and the cutting action penetrate the plate.

—STEEL, 10-5-31

X-Ray Inspection

Relative value and applications of radiographic inspection of steel castings, forgings and welded structures, discussed by H. R. Isenburger, American Society of Mechanical Engineers, Boston, Sept. 22, 7 *pp.*, 21 *illusts.*

Foundry and welding practice are two particular fields where radiography is of utmost value. The principal undesirable conditions in steel castings revealed by this means include gas, slag and sand pockets; gas cavities; sand inclusions; shrinkage cavities; secondary pipes; sponge metal; hot tears; shrinkage cracks; and, rupture. In welding, this apparatus reveals improper fusion as scarfs, unfused laps, gas inclusions and shrinkage cracks. The X-ray helps to select the welding rod and its size and determines the best way the welder should hold the arc. The best and proper amount of coating thus can be determined. The appearance of the various defects is almost the same whether in castings or welded seams when the examination is made by X-ray and gamma-ray, but the precision in X-ray inspection can be raised up to 1 per cent in 3-inch stock and less compared with not better than 3 per cent in gamma-ray examination.

—STEEL, 10-5-31

Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

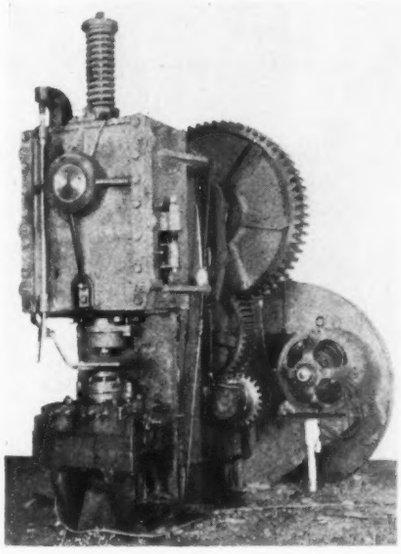
Welded Steel Utilized in Powerful Washer Press

Reading Iron Co., Reading, Pa., with the co-operation of Lukenweld Inc., Coatesville, Pa., recently designed and built a heavy-duty washer punch press. This machine, which is shown in the accompanying illustration, will exert 525 tons ram pressure. It is capable of cold punching, at one stroke, complete washers up to 6 inches outside diameter and 3 inches inside diameter from rolled steel plate up to 5/16-inch thick.

Housing, outboard bearing stand assembly, gears, pinions, flywheel and other parts of this press were fabricated by Lukenweld Inc. by gas cutting, forming and arc welding of rolled steel plates and slabs. This method is said to have resulted in saving in weight of more than 2½ tons, besides insuring that metal was placed where most needed. Imperfect metal also is avoided.

Power is provided by a 25-horsepower motor with a speed range of 2 to 1 for operation at 40 revolutions per minute maximum for small washers and 20 revolutions per minute maximum for large washers. The method of transmitting power from motor to pitman takes advantage of the fact that the welded rolled steel flywheel can be run safely at unusually high speeds, thereby permitting this light weight wheel to store up the necessary energy to drive the punch through the plate.

The press is equipped with mechanism which ejects punched washers from the dies and places them on a throw-out arm from which they are deposited in a receptacle at the side.



Welded steel washer press built by Reading Iron Co.

◆

Fork-Type Lift Truck Has Capacity of 3 Tons

Elwell-Parker Electric Co., 4205 St. Clair avenue, Cleveland, has added to its line a fork-type lift truck having the unusual capacity of 6000 pounds, coupled with easy maneuverability. The accompanying illustration gives a clear conception of the rugged strength and power of this heavy materials handling unit.

This truck is built to accommodate either a storage battery or a gas-electric power unit. All operating safety features are retained with gas-electric drive, an electric controller avoiding use of clutch and transmission, thereby avoiding any increase in wear and tear on the equipment. The power plant is mounted with three-point suspension which protects it when uneven runways are negotiated.

Tractive power is furnished to the knuckle mounted rear wheels by a heavy duty electric motor, through a worm and gear drive. The worm wheel is phosphor bronze and four nickel steel bevel gears are used in the differential, the cross of which is a heat treated and ground drop forging.

The differential cage is a drop forging, as also is the brake wheel, which is finished by grinding. Heat treated molybdenum steel drive shafts, heat treated and ground universal joints of chrome vanadium steel and drop forged wheel driving clutch plates are used. The drive wheels, which are 22 inches in diameter, are said to be the largest ever applied to an electric industrial truck of this general type.

Operates In Close Quarters

The trail axle likewise is of knuckle type, its 15 x 7-inch wheels steering as do those of the rear axle. This permits maneuvering of the heavy machine in congested quarters. Steering is by a large handwheel on a vertical column. The trail axle is centrally pivoted so that the load forks in front of it remain level, even though the wheels rest upon an uneven floor.

The forks are made in various lengths and spreads to handle materials ranging all the way from black sheets and tin plate, to heavy castings, crated machines, boxes, barrels and finished products of various kinds. After thrusting the forks under a load, they can be tilted back 30 degrees, thereby causing the weight of the load to hold it firmly in place. The load can be elevated

Elwell-Parker fork-type lift truck, driven either by storage batteries or by gas-electric unit, will transport a 6000-pound load and will elevate it 5 feet high

to a height of 5 feet for purposes of tiering.

In cases where higher tiering is necessary, the uprights are made longer, which allows the forks to rise to greater height. Where headroom is limited, as in box cars and through low doorways, telescoping uprights can be furnished for high tiering. Tilting and elevating both are accomplished by one unit. Lift is by cable, and tilting is by rack and pinion which also provides several degrees of forward tilting. Automatic limit switches are used throughout.

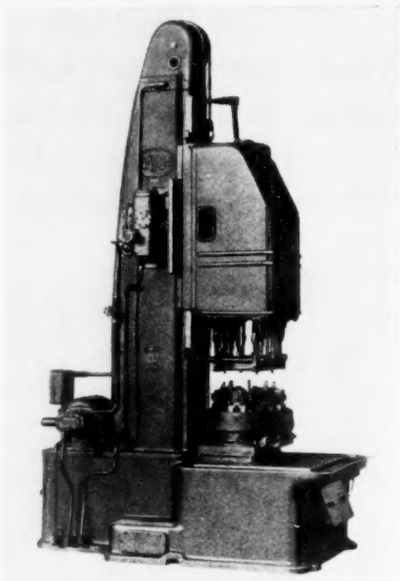
◆

New Blueprinting Machines Are Moderately Priced

C. F. Pease Co., 813-821 North Franklin street, Chicago, has added to its line two moderately priced blueprinting machines of continuous type. These are built in 42 and 54 inch widths, and can be supplied either with gas or with electrically heated drying units. One of these machines is shown in the accompanying illustration.

The complete outfit comprises three units, the printer, the preliminary washer, and a combination unit in which the prints are chemically treated, rewashed and dried. The printing unit can be operated independently, simply by throwing out a clutch. As a matter of fact, the printing unit can be purchased separately, auxiliary equipment being added later as desired.

When set up for continuous operation, tracings are laid face up on a strip of paper fed from a roll at the front. Travel is upward and around the contact glass, behind which is the bank of horizontally aligned, high power arc lamps—six in the 42-inch machine and seven in the 54 inch. After exposure, the tracings return automatically to their tray at the front. Undeveloped prints on the continuous strip pass on to subsequent automatic treatments, but if single prints are being made on cut paper, both paper and tracing return to the tray. These single prints are washed and dried individually.



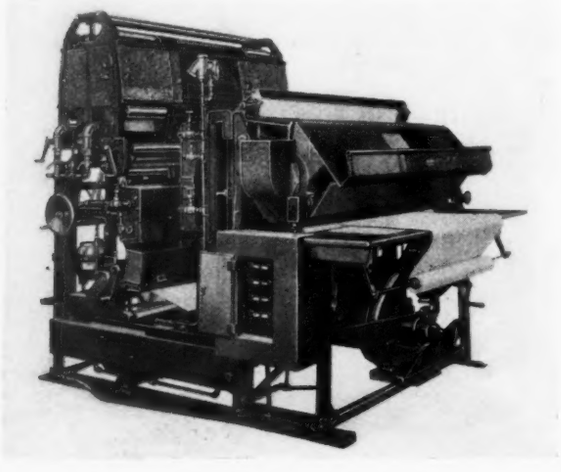
Simplified design of hydraulic drill by National Automatic Tool Co.

Thorough Washing Assured

In the case of the continuous strip, it passes downward into a spray compartment which washes both sides of the paper thoroughly, thence over a roll-type chemical applicator set in a tray at the bottom center of the machine. This tray is fed automatically from a container at the rear. Following this the paper again is subjected to thorough spray washing and enters the dryer.

The dryer is of twin radiator, air-type and consists of two banks of heating units between which the paper travels. A floating idler roll, raised or lowered by a crank, makes it easy to thread the paper through the machine. Accurate heat control is provided for and side doors and sliding panels permit regulation of humidity as well as allowing observation of finished prints before winding.

The machines are substantially constructed and are finished in durable olive green enamel. They have pressure grease fittings and are shipped completely piped and wired ready for installation.



Continuous blueprinting machine developed by C. F. Pease Co. meets demand for equipment of this kind at medium price. Rapid printing and thorough washing are features of its performance

◆

Hydraulic Drill Is Built For Fixed-Center Heads

National Automatic Tool Co., Richmond, Ind., has brought out a vertical hydraulic driller of simplified design. It is arranged for the mounting of fixed-center heads only and compares in capacity to the standard 6-inch horizontal unit built by this company. The accompanying illustration shows this new machine.

Either high or low bases can be furnished as standard equipment. The high base has a 36 x 29-inch working surface approximately 24 inches above the floor line. It is provided with chip chutes and a clean-out hole at the front. The low base has a 36 x 32-inch working surface approximately 9¼ inches above the floor line. This is intended for use when high fixtures are employed or when a box or rotating table is desirable. Both have generous coolant channels draining into a tank under and around the front.

Effective Base Design

Both bases are amply rigid to withstand maximum drilling thrust with practically no deflection. The rear section in each case serves as a platform for bolting down the column, as well as for mounting the hydraulic pumping unit, which is located at the rear of the column. In both bases the interior of this rear section serves as a reservoir for the oil used in the hydraulic system. This can be filled conveniently through an opening located at the right rear of the base.

The box column has square ways and in its top housing is a double sheave wheel. This wheel carries the cables on which are hung within the column the counterweight for the slide and head on the face of the column.

The hydraulic unit consists of a motor directly connected to a constant pressure pump. A 1200 revo-

More Than 2,300 Bought By The Nation's Railroads

Wherever you find the subject of moving materials being studied, wherever handling expense is understood in its true relation to production costs—there you will usually find Industrial Brownhoist cranes at work.

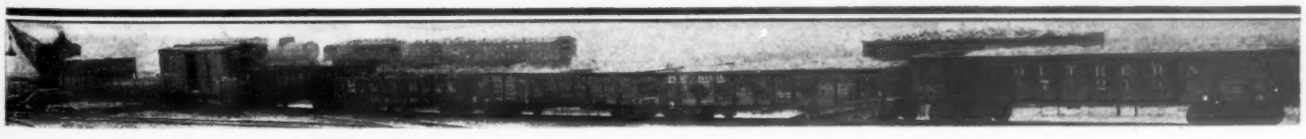
The railroads of America, for example, whose entire profits depend on the economical handling of materials, have bought more than 2,300 Industrial Brownhoists. No other maker of locomotive cranes can show such a record; few can show a total output as large.

If your business is faced with keener competition, and whose isn't, Industrial Brownhoist can help you lower costs. Finding the way to better and faster handling methods is the full-time job of our factory-trained representatives. Our half century's experience is at your service. Just get in touch with our nearest office.

Industrial Brownhoist Corporation, General Offices, Cleveland, Ohio

District Offices: New York, Philadelphia, Pittsburgh, Detroit, Chicago, New Orleans, San Francisco, Cleveland.

INDUSTRIAL BROWNHOIST



lutions per minute motor being recommended. For usual work a 3-horsepower motor will deliver oil up to 200 pounds per inch pressure, giving total feeding pressure of 5600 pounds. For special applications a 5-horsepower motor which raises the pressure to 300 pounds per square inch is used. This gives total feeding pressure of 8000 pounds.

Feeds from zero up to 15 inches per minute, and rapid traverse up to 80 inches per minute are possible. Secondary feed, jump feed, fixed stop and delayed reverse can be attained by the use of special valve attachments.

The machine stands 136 inches high, requires 83 x 48 inches of floor space and weighs 8000 pounds without cluster heads and fixtures.

◆

Conveyor Wheels Are Made For Various Conditions

Mathews Conveyer Co., Ellwood City, Pa., has developed a new type of wheel conveyor for use with sheet or plate material which is easily scratched or marred, as well as for the general average of heavy duty conveying work. In the accompanying illustration there is shown at the left one of the wood fiber tired wheels for handling delicate materials, while at the right is one of the pressed steel wheels for ordinary heavy duty service. A third type (not shown) has a hardened steel tire, arc welded to the housing of its ball bearing hub. All of these wheels are 4 inches in diameter.

The fiber tired variety has a ¾-inch face and runs on eleven 5/16-inch hardened steel balls. These wheels are bored for ½-inch countersunk bolts and are mounted on standard frames consisting of 3 x 2 x ¼-inch angles arc welded to structural steel cross members. The fiber tired wheels have load capacity of 50 pounds each.

The pressed steel wheels are made of 13 gage stock with outside tire of double thickness, this having a 15/16-inch face. These wheels run on twelve ⅜-inch bearing balls and are mounted by ¾-inch bolts to structural frames built to customers' specifications. Each wheel has load capacity of 300 pounds. Specifications for the hardened steel shod wheel are the same as the pressed steel model as far as diameter, bearing, bolt, frame and load capacity are concerned. Its tire width, however, is ½-inch.

◆

Special Files Designed for Truing Flat Surfaces

Production Engineering Co., West 1848 Broadway, Spokane, Wash., has put on the market a set of files designed especially for producing flat true surfaces.

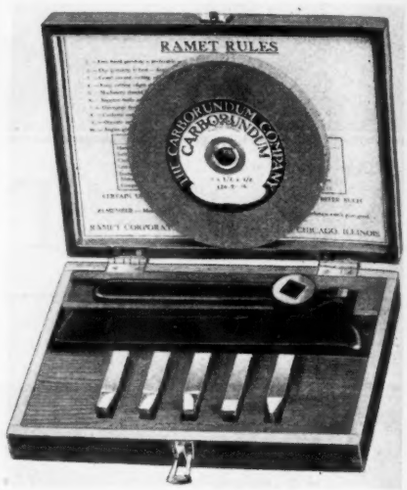
These files are rectangular in shape, with a loop handle fastened to the back. Ordinary they are used much like a plane. On certain other work such as the filing of connecting rod bearings, the handle is held in a vise and the work is drawn over the file. Also, the handle can be removed and the file screwed down to the surface of the bench so that the work can be conveniently drawn over it.

The files, which are made of alloy steel taking a high degree of hardness, have teeth with rounded gullets which clear effectively when cutting babbit, aluminum or other soft metals. They are furnished in three sizes; 2 x 12 inches, 3 x 12 inches and 4 x 12 inches.

◆

Tantalum Carbide Tool Set Available to Small Shops

Ramet Corp. of America, North Chicago, has put on the market a set consisting of five small but sturdy tantalum carbide-tipped lathe tool bits, a rugged drop forged tool holder for these bits, a socket wrench for tightening the bits in their holder, and a special grinding wheel for sharpening and dressing the blades. As is shown in the accompany illustration, the set is packed in a substantial wooden case, on the inside of whose cover are brief rules for the successful handling of tantalum carbide tools.



Set of tantalum carbide-tipped tools offered by Ramet Corp. of America

The maker points out that this set brings the advantages and economies of tantalum carbide tools to small plants which ordinarily could not afford them because of the high cost of special designs.

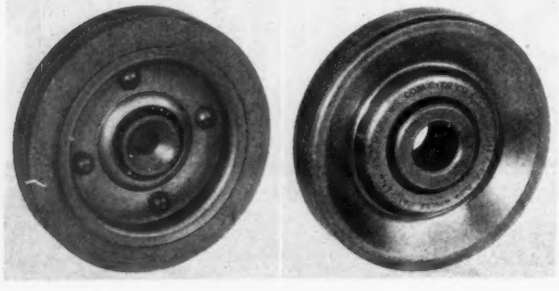
One important feature of these tool bits is that their shanks are of a special metal having practically the same coefficient of expansion as their tantalum carbide tips. This insures the tips against dangerous strains due to heating when cutting.

The set of bits consists of; two right hand, one left hand, one round nose and one grooving tool. The holder is designed to give solid support and proper top rake. The special wheel, which will fit practically all bench grinders, gives a keen cutting edge with removal of a minimum amount of the vital material of the tip.

Plus or Minus 0.0002 Inch Are Grinder Infeed Limits

Through an error in the copy furnished to STEEL by Cincinnati Grinders Inc., an incorrect statement appeared on Page 46, Sept. 17 issue, setting forth plus or minus 0.002 inch as limits of accuracy held on cylindrical grinders equipped with this company's new infeed unit.

The builder has furnished us with the following corrected statement, "Limits of plus or minus 0.0002 inch are held on all diameters of shafts ground with semiautomatic infeed unit on our plain, self-contained grinder."



Improved conveyor wheels developed by Mathews Conveyer Co. One at left has resilient tire, the other is pressed steel

Pig Iron Output Off; Prices Easier

Weak Spots Not Yet Directly Traceable To Wage Cut—Fractional Gain in Operating Rate Indicated for Current Week—Larger Demand for Rails

SEPTEMBER continued the decline in the daily rate of pig iron production that has been in progress since May, but the decline —5.9 per cent—was considerably smaller than the recession from July to August.

September also had this redeeming feature: For the first time since the number of active blast furnaces began to fall last April there was an actual gain of one in the number of active steelworks stacks. The continued easing in the merchant iron situation, however, made the net loss in active stacks Sept. 30, one, leaving 74 active.

September's daily rate was 38,821 gross tons, lowest since September, 1921. Total output for the month—1,164,645 tons— also was the lowest in 10 years. In 9 months of 1931 total pig iron production has been 15,004,243 tons, or 41.8 per cent below the same period of 1930.

Pig iron has become more highly competitive and the price situation somewhat weaker as blast furnace interests have reached out beyond their home territories and offered the concessions necessary to attract business.

Soft spots also are evident in steel. Tin plate is off the equivalent of $5 per ton, to as low a level as since the war. Large rivets have surrendered the second $5 per ton in a month; cold-rolled strip is being shaded $2 per ton and more; one classification of stainless steel has been reduced 3 cents a pound.

While buyers have been following the wage situation closely to benefit from any repercussion from the 10 per cent cut effective Oct. 1, these price reductions are isolated and not directly chargeable to lower wages. Heavy finished steel and sheets, comprising the bulk of mill tonnage, in the main are steady.

STEEL's market composites, however, have suffered another sinking spell. The iron and steel composite, down 20 cents, now stands at $30.82, a new postwar low; the finished steel composite has fallen 50 cents to $48.22; while easiness in scrap has lowered that composite 8 cents to $8.67.

For the week ended Oct. 3 steelmaking operations were steady at about 29 per cent, Pittsburgh being lowest at 26 per cent, and Cleveland and Buffalo highest at 35. A fractional increase for the week ended Oct. 10 is indicated, as the lighting of a steelworks blast furnace at Pittsburgh may presage a more active steel situation, and a scheduled 5 point rise at Buffalo more than washes out a proposed 2 point retrenchment at Cleveland.

Structural shape awards for the week—41,440 tons—approximate the weekly average for the year. Demand for reinforcing bars is more active, led by 3700 tons placed for the Calumet, Ill., sewage disposal plant, and 4700 tons pending for the Cleveland disposal plant.

October opens with expected improvement in the automotive industry still receding in the distance. For practically all manufacturers, schedules for new models have been pushed back 30 days, and Youngstown sheet and strip mills do not expect sizable business until early in November.

Last week's distribution of 45,000 tons of rails by the Chesapeake & Ohio railroad should be followed closely by an order for track fastenings. The Santa Fe is expected to inquire shortly for 50,000 to 60,000 tons of rails. September freight car awards, at 503, compare with 1104 in August and 576 last September. In nine months, freight car orders aggregate 9018; one year ago they were 35,680.

Hinging largely upon the disposition of the railroads' application for a 15 per cent advance in freight rates is inquiry at Pittsburgh for a total of 300 barges requiring 30,000 tons of plates and shapes.

Composite Market Averages

	Oct. 3	Sept. 30	One Month Ago (Sept., 1931)	Three Months Ago (July, 1931)	One Year Ago (Oct., 1930)	Ten Years Ago (Oct., 1921)
Iron and Steel Composite	$30.82	$31.02	$31.03	$31.05	$32.26	$35.46
Finished Steel Composite	48.22	48.72	48.72	48.68	50.13	54.75
Steelworks Scrap Composite	8.67	8.75	8.82	8.70	12.32	11.89

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. **Finished Steel Composite:**—Plates, shapes, bars, sheets, hot strip, nails, tin plate, pipe. **Steelworks Scrap Composite:**—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Oct. 3, 1931	Sept., 1931	July, 1931	Oct., 1930
PIG IRON				
Bessemer, del. Pittsburgh	$18.26	18.26	18.26	19.36
Basic, valley	17.00	17.00	17.00	17.00
Basic, eastern del. eastern Pa.	16.50	16.50	16.75	17.50
No. 2 foundry, del. Pittsburgh	18.26	18.26	18.26	18.46
No. 2 foundry, Chicago	17.50	17.50	17.50	17.50
*Southern No. 2, Birmingham	12.00	12.00	12.00	14.00
**No. 2X, Virginia furnace	18.00	18.00	18.25	18.25
**No. 2X, Eastern del., Phila.	17.26	17.26	17.51	19.26
Malleable, valley	17.00	17.00	17.00	17.80
Malleable, Chicago	17.50	17.50	17.50	17.50
Lake Superior, charcoal, del. Chi.	25.04	25.54	27.04	27.04
Gray forge, del. Pittsburgh	17.63	17.63	17.63	17.83
Ferromanganese, del. Pittsburgh	89.79	89.79	89.79	103.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $11, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.40	2.40	2.40	2.60
Connellsville foundry, ovens	3.25	3.25	3.25	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	29.00	29.00	29.00	31.00
Sheet bars, open-hearth, Pitts.	29.00	29.00	29.00	31.00
Billets, open-hearth, Pittsburgh	29.00	29.00	29.00	31.00
Wire rods, Pittsburgh	35.00	35.00	35.00	36.00

	Oct. 3, 1931	Sept., 1931	July, 1931	Oct., 1930
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.89	1.89	1.89	1.89
Iron bars, Chicago	1.70	1.70	1.70	1.75
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.76	1.76	1.76	1.76
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Philadelphia	1.80½	1.80½	1.80½	1.80½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.85	1.85	1.85	1.95
†Sheets, No. 24, hot, ann., Pitts.	2.40	2.40	2.40	2.40
Sheets, No. 24, galvan., Pitts.	2.90	2.90	2.90	3.00
Sheets, No. 10 blue anneal., Chi.	2.00	2.00	2.00	2.15
†Sheets, No. 24, hot, ann., Chi.	2.55	2.55	2.55	2.60
Sheets, No. 24 galvan., Chi.	3.05	3.05	3.00	3.20
Plain wire, Pittsburgh	2.20	2.20	2.20	2.30
Wire nails, Pittsburgh	1.90	1.90	1.85	2.00
Tin plate, per base box, Pitts.	4.75	5.00	5.00	5.00

†Comparisons are with old classification No. 24 black sheets

SCRAP				
Heavy melting steel, Pitts.	$10.50	10.80	10.50	14.80
Heavy melting steel, eastern Pa.	8.50	8.50	8.75	12.00
Heavy melting steel, Chicago	7.75	7.95	8.50	11.55
No. 1 wrought, eastern Pa.	9.50	9.75	9.75	14.25
No. 1 wrought, Chicago	8.00	8.00	8.25	10.95
Rails for rolling, Chicago	10.50	10.50	10.50	14.10

Sheets

Business Still Delayed—Automotive Needs Not Expected to Expand Until November

SHEET PRICES, PAGE 59

Pittsburgh—Changes in requirements of leading sheet consumers are slight, and total business approximates the light volume of the past 30 days. The outlook for improved demand from the automotive industry this month is regarded as rather discouraging. Little increase in requirements of the industry is looked for until early November. Total shipments are off slightly from the rate of a month ago, and operations average no higher than 30 per cent. Little fourth quarter business is developing although prices are steady on what new business is appearing. The market continues at recent prices of 2.40c, Pittsburgh, for hot-rolled annealed sheets; 1.85c for blue annealed; 2.90c for galvanized; and 3.10c for autobody. Tin mill black sheets are not affected by the reduction in tin plate, continuing 2.65c.

New York—While one large seller of sheets reports a gain in bookings for the second consecutive week, general volume for the district shows no change. Prices are steady.

Youngstown, O. — Miscellaneous lines of steel sheets are showing more activity than the grades which generally are in greatest demand. A fair volume of specificatons for galvanized sheets is noted, and also a pick-up in electrical sheets. The revival in autobody sheet buying, expected about Oct. 1, again has been delayed about 30 days, because of the decision of builders to defer new models. The one encouraging feature today in the steel sheet trade is the firmness of quotations.

Buffalo—District sheet mills are operating at 30 to 35 per cent. Purchases for the automotive industry have failed to meet expectations.

Cleveland—One of the automobile manufacturers in the Detroit district has been attempting to cover requirements through to July, 1932, on sheet and strip, but protection is not being extended beyond the fourth quarter. The sheet price schedule remains firm with No. 24 hot-rolled annealed 2.40c, Pittsburgh, even for local barrel makers. The general run of business is light.

Cincinnati—Inquiries to district sheet mills are chiefly confined to small lots for immediate needs. The market remains dull with production schedules holding unchanged.

Chicago—Sheet mill production is off five points, to about 35 per cent for the district. Five of the ten Milwaukee mills of a leading independent will operate at least another week. Occasional sales of galvanized have been made at 3.00c, base mills, but in general prices remain untested for fourth quarter. A sprinkling of carload orders is noted from jobbers and the light manufacturing trade. Lack of buying by implement and tractor manufacturers leaves a wide gap.

St. Louis—The market is quiet, though the outlook for October is brighter than during the preceding two months. Specifications for automotive sheets are slightly heavier, and moderate improvement is noted in demand for galvanized.

Birmingham, Ala.—Active demand for sheets warrants operations of mills at 60 per cent or better. New business is encouraging for the remainder of the year.

Philadelphia—Sheet demand is quiet, and prices are steady. Indications are that 250 tons of galvanized sheets for a building at Twelfth and Market streets will be awarded a jobber shortly.

American Shipbuilding Co., Cleveland, reports net profit of $43,010 in the fiscal year ended June 30. Dividend disbursements in the fiscal year amounted to $711,280, thus leaving a net deficit of $668,270. Former surplus of $2,957,482 was reduced to $2,289,212.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

HOT ROLLED No. 10

Pittsburgh base	1.70c
Gary, Ind. Harbor, base..	1.80c
Chicago, del.	1.85c
Philadelphia, del.	1.99c
Birmingham, base	1.85c

BLUE ANNEALED No. 9-10

Pittsburgh, base	1.85c
Chicago, district mills	1.95c
Chicago, delivered	2.00c
Philadelphia, del.	2.14c
St. Louis, delivered	2.20½c
Birmingham	2.00c to 2.05c
San Francisco, c.i.f.	2.50c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.40c
Gary, Ind. Harbor, base....	2.50c
Chicago, del.	2.55c
Philadelphia, del.	2.69c
Birmingham, base	2.55c
St. Louis, del.	2.75½c

GALVANIZED No. 24

Pittsburgh, base	2.90c
Gary, Ind. Harbor, base.....	3.00c
Chicago, del.	3.05c
Philadelphia, base	3.19c
Birmingham, base	3.05c
St. Louis, del.	3.25½c

AUTOMOBILE No. 20

Pittsburgh, base	3.10c

FURNITURE

Pitts., No. 10 heavy	2.75c
Pitts., No. 20 light	3.35c

TIN MILL BLACK No. 28

Pittsburgh, base	2.65c
Gary base	2.75c
St. Louis, el.	2.90½c

HEAVY COLD ROLLED No. 10

Pittsburgh base	2.35c
Gary, Ind. Harbor, base....	2.45c
Chicago, del.	2.50c
Philadelphia, del.	2.64c
St. Louis, del.	2.70½c

COLD ROLLED No. 20

Pittsburgh, base	2.95c
Gary, Ind. Harbor, base....	3.05c
Chicago, del.	3.10c
Philadelphia, del.	3.24c
St. Louis, del.	3.30½c

Tin and Terne Plate

Prices per 100 pound box Pittsburgh

Tin plate, coke base	$4.75

Gary, Ind., base 10 cents higher.

Long ternes 24, unassorted, lb.	3.15c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.90 and 2.00
Cement coated nails	1.90 and 2.00
Galvanized nails	3.90 and 4.00

(Per pound)

Polished staples	2.35c and 2.45c
Galvanized staples	2.60c and 2.70c
Barbed wire, gal.	2.55c and 2.65c
Annealed fence wire	2.35c and 2.45c
Galvanized wire	2.80c and 2.90c
Woven wire fencing, (9-11 ga.)	$55.00 and $60.00
(12½ ga. and lighter)	60.00 and 65.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.30c
7/16-in smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70, 10 and 5 off

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.80½c
New York, delivered	1.88c
Boston, delivered	2.00c
Chicago, base	1.70c
Cleveland, base, for railroads	1.65c
Lackawanna, N. Y., base....	1.70c
Birmingham, base	1.75c to 1.80c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	1.85c to 1.95c
St. Louis, del.	1.95½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.76c
New York, del.	1.85½c
Boston, del.	1.98½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Lackawanna, N. Y., base....	1.70c
Birmingham base	1.75c to 1.80c
Pacific Coast, c.i.f.	2.05c to 2.15c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham base	1.75c to 1.80c
Lackawanna, N. Y., base....	1.70c
Pacific Coast, c.i.f.	2.00c to 2.05c
Cleveland, base, local del.	1.65c
Cleveland base, out. del....	1.65c
Philadelphia, del.	1.89c
New York, del.	1.93c
Boston, del.	2.00c
Pittsburgh, cold finish	1.85c
Pittsburgh, forg. qual.	1.90c

RAIL STEEL

Chicago Heights	1.60c
Eastern mills	1.30c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.70c
New York, delivered	1.93c to 2.03c
Philadelphia, delivered	1.89c to 1.99c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.75c
Stock lengths, mill	1.60c
Chi., billet	1.60c to 1.80c
Chi., rail steel	1.35c to 1.60c
Chi., rail steel, bridge and culvert	1.60c to 1.65c
Philadelphia, cut lengths..	1.94c to 1.99c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland....	2.10c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	7.00 to 7.45 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10 Cr.	0.45
2300	1.50	51.00 Cr. spring	0.20
2500	2.25	6100 bars	1.20
3100	0.55	6100 Spring	0.95
3200	1.35	Cr., Ni., Van.	1.50
3300	3.80	Carbon Van...	0.95
3400	3.80	9250 (flats)	0.25
4100 .15 to .25 Mo.	0.50	9250 (rds..sq.)	0.50
4600 .20 to .30 Mo.			

Strip, Hoops Bands

Hot strip, to 6-in., Pitts.	1.65c
Do, 6 1/16 to 24-in., Pitts.	1.55c
Hot strip, bands 6 in. and under, Chicago	1.75c
Do, 6 1/16 to 24 in.	1.65c
Cooperage hoop, Pitts.	1.70c to 1.80c
Do, Chicago	1.85c to 1.95c
Cold rolled strip, Pitts., Cleveland	2.00c to 2.15c
Worcester, 3 tons, over	2.30c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$22.00 to $26.00
50 to 75	20.00 to 24.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.70c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.70c
Spikes boat, barge, Pitts.	2.90c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do, standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 and 10 off
Rolled thread ¾ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 73 and 10 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 and 10 off
Tire bolts ..... 60, 10 and 10 off
Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.
Rolled thread machine bolts, ¾ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 and 10 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off
Upset 1 in. diam. and smaller.... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off
Upset 1 in. and smaller ..... 80-10-5 off
Upset, larger than 1 in. 80-5off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh 2.50c
Do, less carloads, 5 kegs or over, 2.75c; less than 5 kegs 2.90c.

Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Bars

Buying Fails to Improve from September Rate—Forward Buying Is in Small Volume

BAR PRICES, PAGE 59

Chicago—Shipping orders for bars and other heavy finished products show a moderate gain, although this does not represent a definite trend. Deformed bar shipments are almost normal for this season, while the large consuming groups order in restricted volume. Since it is evident that much of the new car production scheduled for October will be postponed, large western automotive parts makers have revised downward their schedules for this month, and cold finished buyers are restricting shipments. Many buyers still are unconvinced that price easing will not follow the steel industry's wage cuts. Forward interest is so light that no substantial test has been given the 1.70c base Chicago price for fourth quarter, although contract sales covering 15 to 30 days on that basis are fairly numerous. Alloy bar mills are operating at 20 to 30 per cent.

New York—Common steel bars are steady at 1.60c, Pittstburgh, with specifications showing no change from the small rate of recent weeks. Common iron bars are quiet at 1.60c to 1.70c.

Philadelphia—Steel bars are firm at 1.60c, Pittsburgh. The trade expects a pickup in railroad demand for bars and miscellaneous steel after Oct. 15, when a decision in the freight rate case is expected—regardless of whether the decision is favorable or unfavorable to the railroads.

Pittsburgh—Steel bar demand fails to improve from the low rate attained the latter part of September. The price shows stability at 1.60c, Pittsburgh, although tested by only small lots. Contracting is quiet and users are showing little interest in seeking protection against future requirements. Automotive orders are dull and little changed.

Cleveland—As September closed no noticeable expansion in specifications for merchant steel bars was effected although sentiment was gaining increasing impetus for a bulge to come sometime in October with a resumption in purchase of several plants in this district allied with the automobile industry. Several of the manufacturing concerns making replacement parts for automobiles have been on fairly good operation recently. The local bar mill continues to run five open hearths and has its finishing mills on a five-day week. The 1.65c, Cleveland base price is applied on these orders received for either local or outside deliveries.

Cold-Finished Makers Await Auto Purchasing

Cold Finished Prices, Page 59

Pittsburgh—Cold-finished bar producers are deferring expectations of improved automotive demand until late in October. Automotive orders currently are at the lowest level of the year although production of new models later in the quarter is expected to benefit operations within the next four to six weeks. Demands of other consumers have improved only slightly during recent weeks. Prices are steady, with old contracts being extended into the new quarter.

Cleveland—Several orders for cold-rolled alloy bars from hitherto inactive users were received last week, the slight gain being due to a better number of inquiries which these manufacturers themselves had received. Automobile parts and local screw machine plants are not taking any more cold-drawn steel than they have in the immediate past, which affords a form of encouragement, but on the other hand their commitments have not increased. The 2.10c, Cleveland base, is applied on new accounts.

Show Treadwell Products

A photographic exhibit of products made by the Treadwell Construction Co., Midland, Pa., and of scenes within the company's plant was held recently at the Carnegie public library at East Liverpool, O., under auspices of the East Liverpool chamber of commerce. Tanks, ladles, barges, syphons, spillway gates, flues, uptakes, blast furnaces and many other pojects of the Treadwell company were depicted. The Treadwell company, organized in 1909, has increased its floor space from 30,000 square feet to 116,000, and at capacity employs 600 persons and has a monthly capacity of 3000 tons of fabricated material.

Plates

Three Hundred Barges Pending at Pittsburgh—More Western Tank Work Expected

PLATE PRICES, PAGE 59

Chicago—Reopening of operations in the Oklahoma City oil field is expected to release 2000 to 3000 tons of plates for storage tanks in the near future. Plate prices are fairly steady at 1.70c, mills. Plate mills are operating 30 to 35 per cent, considerable bridge work being scheduled. Municipal tank work released about 3000 tons of plates and light structurals.

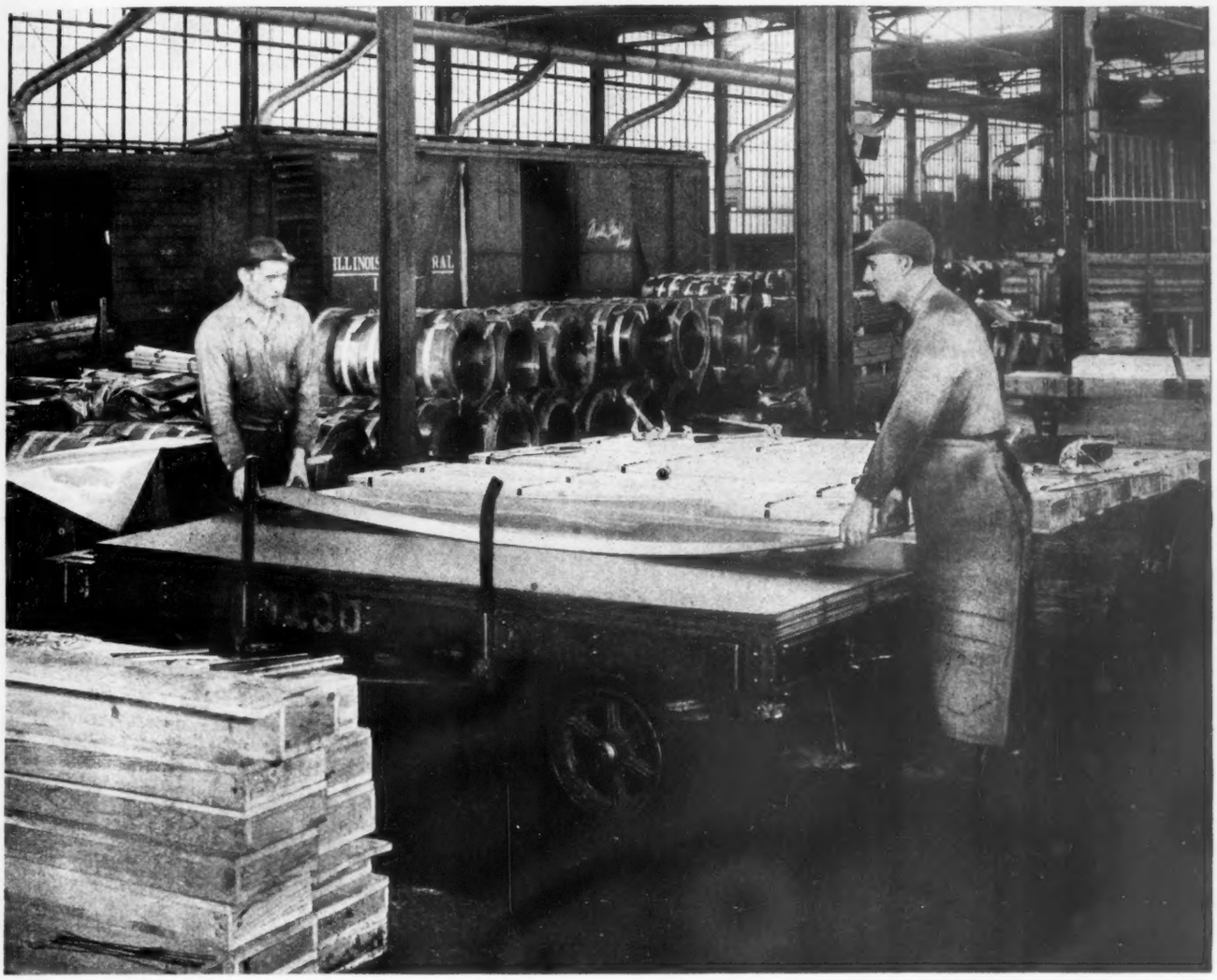
Pittsburgh—Pending inquiries for barges now number about 300 units, requiring a minimum of about 30,000 tons of plates and shapes. Of this total, however, only about one-third are regarded as active and considerable hesitancy still is noted in closing. One lot of 16 barges is expected to be placed shortly. Plate demand for other requirements continues light and specifications are unimproved. The market usually continues 1.60c, Pittsburgh.

Cleveland—Many third quarter plate contracts are being carried into fourth quarter, and consequently new contracting has not only been slow but in diminished volume. The contracts carried over have not been entirely specified, and in some instances, unless a decided revival develops, will not be filled by the end of fourth quarter. Despite some pressure brought to bear for price concessions, 1.60c, Pittsburgh, still is firm. Orders are small.

Gulf Refining Co. is preparing to spend $500,000 on a construction project at Toledo, O.

Philadelphia—While plate sellers are endeavoring to obtain 1.70c, base, Coatesville, Pa., the market is soft. The navy department has awarded five destroyers, one each to the Bath Iron Works, Bethlehem Shipbuilding Corp., and the navy yards at Boston, New York and Puget Sound, their requiring in the aggregate 3500 tons of steel, mainly plates. Action on the remaining six has been deferred indefinitely. Bids for two Federal Barge Line towboats, to cost approximately $400,000, will be taken shortly.

ACME STRIP STEEL



Scientific Packing Insures Perfect Safety

Showing how cut-to-length Acme Cold Rolled Strip Steel is packed in wooden boxes, which are made to order to fit the steel. This eliminates any movement or friction between pieces which might scratch or mar the mirror-like surfaces. Waterproof oiled paper is used to line the boxes, and every piece of steel is swabbed with a heavy coating of special oil to guard against rust. This film of oil also serves to keep the pieces from coming in contact with each other, and prevents scratches. Finally, each box is reinforced for added safety with four tempered steel bands, which are tightly tensioned and then sealed.

. . . . . You cannot get better strip steel, any where, than you can from Acme, nor better service. . . . . Let us quote on your requirements. 80

ACME STEEL COMPANY

General Offices: 2832-40 Archer Ave., Chicago

SAVE WITH STEEL

Branches and Sales Offices in Principal Cities

Structural Shapes

Sunnyvale Air Dock Placed —New York Awards Taper —More Promise of Winter Building at Chicago—Public Work Keeps Shape Mills Busy Above Ingot Rate

STRUCTURAL SHAPE PRICES, PAGE 59

New York—Award of approximately 23,500 tons for the Port Authority inland freight terminal cleans up the largest structural project in this district. Pending work still is heavy, but fresh inquiry is smaller. Railroads are generally covered for maintenance needs for the next quarter. Bridge work in New Jersey and upper New York make up the bulk of fresh inquiry. Prices are unchanged and 1.70c, eastern mill base, holds on ordinary tonnage.

Boston—Fresh inquiry for structurals in the New England district is small. Two bridges on the Boston-Worcester road will require close to 500 tons. Two Maine and New Hampshire state highway projects took approximately 500 tons. Prices are unchanged and inclined to easiness. Total awards in the last week were close to 3000 tons.

Philadelphia—Shape prices are unsettled though the usual figure is 1.70c, eastern mill. Consumers are moving slowly with the possibility of clarification shortly.

Pittsburgh—Activity in the structural market is light and little improvement in demand is indicated from inquiry and pendng work. The market usually is 1.60c, Pittsburgh. About 2000 tons of shapes will be required for a crane placed here by the United States navy.

Cleveland—About 900 tons of miscellaneous sizes of structural and 1100 tons of piling will be bought for the city for the White City sewage job, bids on which close Oct. 23. Other building work is quiet, though plans are expected within another month on the superstructure of the sub-mall exposition and garage. Plain shapes are firm at 1.60c, Pittsburgh.

Chicago—Structural business still offers more promise than plates and bars. Chicago district fabricators are engaged 35 to 40 per cent, chiefly on public work. Bids have been closed on two Chicago junior high schools, 1000 tons each. Local fabricators are submitting bids on 1500 tons for the Miami, Fla., postoffice, and 1000 tons for a field house for the South Park commission in Chicago. Quotations of 1.65c, Chicago, have been made on plain structural material, aside from wide flange beams, which remain firm at 1.70c, base. More winter building is expected than last year.

Birmingham, Ala.—Structural fabricators operated shops on a 4-day schedule the past week and hope for slightly better operations the coming week. Several contracts of less than 100 tons were booked. No specifications are in sight above this size.

Contracts Placed

23,000 tons, inland freight terminal, Port Authority, New York, to Taylor-Fichter Steel Construction Co., New York; Turner Construction Co., contractor.

8000 tons, navy hangar, Sunnyvale, Calif., to Wallace Bridge & Structural Co., Seattle, Wash., at $1,116,044.

3500 tons, bridge over Saguenay river, Chicoutimi, Que., to Eastern Canada Steel & Iron Works, Ltd., Quebec, Que.

2000 tons, 250-ton crane for Puget Sound navy yard, Bremerton, Wash., to Dravo Construction Co., Pittsburgh.

800 tons, structural work at pier and ore docks, Sheboygan, Wis., to McClintic-Marshall Corp., Bethlehem, Pa.

600 tons, gymnasium, University of California, Los Angeles, to Consolidated Steel Corp., Los Angeles.

500 tons, substation for Pacific Gas & Electric Co., Pine and Steiner streets, San Francisco, to Judson-Pacific Co., San Francisco.

500 tons, bridge, Missouri Pacific railroad, to Stupp Bros. Bridge & Iron Co., St. Louis.

400 tons, viaduct, Elmhurst, Ill., to Midland Structural Steel Co., Chicago.

400 tons, miscellaneous jobs in Seattle and vicinity, to Isaacson Iron Works, Seattle.

250 tons, turbine supports, Public Service Corp. of New Jersey, Kearny, N. J., to Shoemaker Bridge Co., Pottstown, Pa.

Awards Compared

	Tons
Awards, week ended Oct. 3	41,441
Awards last week	16,437
Awards two weeks ago	89,700
Awards this week in 1930	26,483
Av. weekly awards, 1930	35,242
Av. weekly awards, 1931	37,481
Av. weekly awards, Sept.	62,558
Total awards to date, 1930	1,447,828
Total awards to date, 1931	1,536,736

240 tons, wood-working plant, Dixfield, Me., to Lyons Iron Works, Manchester, N. H.

235 tons, airport driveway and grade separations, Dearborn, Mich., to Whitehead & Kales Co., Detroit.

225 tons, Outhwaite avenue recreation center for Cleveland, to Burger Iron Co., Akron, O. Work also includes 45 tons reinforcing bars. Aronberg-Fried Co., Cleveland, contractors.

150 tons, additional work for Maurice L. Rothschild store, Chicago, to Duffin Iron Co., Chicago.

125 tons, junior high school, Dayton, O., for board of education, to Dayton Structural Steel Co., through Industrial Building Co., Dayton, contractor. Seventy tons reinforcing bars to Pollak Steel Co., Cincinnati.

116 tons, 5-ton gantry crane for Seattle Ford Motor Co. assembly plant and light towers for Seattle light department, to Star Iron & Steel Co., Tacoma, Wash., and A. M. Castle, Seattle, respectively.

100 tons, shapes and bars, addition, Paul junior high school, Washington, to Ingalls Iron Works, Verona, Pa., and Concrete Steel Co., New York. A. Lloyd Goode, Charlotte, N. C., contractor.

100 tons, laundry building state hospital, Medical Lake, Wash., to Isaacson Iron Works, Seattle.

100 tons, postoffice building frame, Hoaquiam, Wash., to Isaacson Iron Works, Seattle.

100 tons, bridge spans for Chicago, Rock Island & Pacific railroad at Chicago, to Gage Structural Steel Co., Chicago.

Contracts Pending

7500 tons, west side elevated, New York Central railroad, New York; McClintic-Marshall Corp., Bethlehem, Pa., low.

5000 tons, Supreme Court building, Washington; bids open Oct. 21.

1500 tons, postoffice, Miami, Fla.; general contract to Ralph Sollitt Construction Co., Chicago.

1100 tons, piling, White City Sewage plant, Cleveland; bids close Oct. 23.

1000 tons, Gallileo junior high school, Chicago; Gage Structural Steel Co., Chicago, low.

1000 tons, Rembrandt junior high school, Chicago; Vanderkloot Steel Works, Chicago, low.

1000 tons, field house for South Park commission, Chicago.

900 tons, White City sewage plant, Cleveland; bids close Oct. 23.

500 tons, Lakeland hospital, Camden county, N. J.; Belmont Iron Works, Philadelphia, low.

400 tons, plant, San Francisco, for Owens-Illinois Glass Co., Toledo, O.

375 tons, postoffice, Altoona, Pa.; bids being taken.

320 tons, physics building, University of Cincinnati, Cincinnati; M. J. Roche Construction Co., Cincinnati, contractor.

250 tons, F. W. Woolworth Co. building, Chestnut street, Philadelphia.

250 tons, Interstate Hosiery Mills, Lansdale, Pa.; W. F. Lotz, Philadelphia, contractor.

200 tons, government building, Annapolis, Md.

110 tons, Frisco bridge, Lindenwood, Mo.

100 tons, bank, Toledo, O.

Unstated tonnage, power house, Fort Wayne, Ind.

Unstated tonnage, sheet piling, plates caissons, Franklin memorial foundation, Philadelphia; McNickel Paving & Contracting Co., foundation contractor.

Concrete Bars

Calumet Sewage Plant, 3700 Tons, Booked by Inland—Bids Oct. 23 on 4700 Tons at Cleveland—Awards Gain for Week to Over 5000-Ton Mark—More Inquiry Out

REINFORCING BAR PRICES, PAGE 59

Chicago—Leading with 3700 tons of billet bars for the Calumet sewage disposal plant extensions of the Chicago sanitary district, covering 3200 tons for aeration and settling tanks and 500 tons for operating galleries, reinforcing bar awards have shown a pickup. About 400 tons in Illinois bridge and road work has been let, and the veterans' hospital project at Milwaukee took 200 tons. Road and bridge bar quotations are 1.60c to 1.65c.

Philadelphia — Reinforcing bars are easy at 1.50c to 1.55c Pittsburgh. Awards are light though a fair tonnage is in prospect.

Buffalo—Demand continues to be held to a minimum by the lack of major construction activity. Building permits here for the first nine months of this year were just 50 per cent of those of the corresponding period of 1929 and 75 per cent of those of 1930.

Pittsburgh—Specifications against old orders are expected to bolster shipments of reinforcing bars this month since considerable work now under way is scheduled to be completed before the approach of cold weather. The market continues 1.60c for mill lengths, though attractive lots still bring concessions.

Cleveland—The largest reinforcing job in some time is before fabricators calling for 4700 tons for the White City sewage plant. Bids close Oct. 23. About $4,000,000 in new highway work will be let by the state before the turn of the year and a large part of this is expected to call for reinforced steel construction. Cut lengths are easy on large lots but are quoted 1.75c, Cleveland.

Contracts Placed

3700 tons, Calumet sewage disposal plant extensions for Chicago sanitary district, to Inland Steel Co., Chicago. 3200 tons covering aeration and settling tanks awarded by Herlihy-Mid-Continent Construction Co., and 500 tons, operating galleries, awarded by John Griffiths & Son Co., Chicago.

350 tons, viaduct over Union railroad, Summer avenue, near Bingham, Tenn., to Jones & Laughlin Steel Corp.; Pittsburgh; S. & W. Construction Co., Memphis, Tenn., contractor.

300 tons, Illinois road work to Concrete Steel Co., New York.

227 tons, South hill sewer project, Vancouver, B. C., to Dominion Bridge Co., Vancouver, B. C.

200 tons, office tunnel and foundation, postoffice, Atlanta, Ga., to Kilby Car & Foundry Co., Anniston, Ala.; National Construction Co., Washington, contractor. Sixty tons of structural steel pending.

200 tons, additional, for outer drive, Chicago, to Concrete Steel Co., New York.

200 tons, veterans' hospital, Milwaukee, to Calumet Steel Co., Chicago.

158 tons, postoffice, Cedar Rapids, Iowa, to Laclede Steel Co., St. Louis; J. P. Cullen & Son, Janesville, Wis., contractor. Steel placed through O. W. Latimer & Co.

147 tons, junior high school, Springfield, O., to H. L. Thomas Co., Akron, O., through J. W. Nadalin & Co., Columbus, O., contractor. Forty-five tons structural placed with same interest.

135 tons, reservoir, Wenatchee, Wash., to Pacific Coast Steel Corp.; Concrete Construction Co., Seattle, contractor.

100 tons or more, South hill sewer project, Vancouver, B. C., to Evans, Coleman & Evans, Vancouver, B. C.

100 tons, Illinois bridge sections to Calumet Steel Co., Chicago.

Contracts Pending

4700 tons, White City sewage plant, Cleveland; bids close Oct. 23.

500 tons, plant, Consolidated Cigar Co., Philadelphia; Cramp & Co., contractor.

400 tons, Rembrandt and Galaleo junior high schools, Chicago.

350 tons, approaches to municipal bridge, University avenue, Philadelphia; P. & H. A. Ellis, contractors.

300 tons, highway and bridges, route 10, section 3, Whippany to route 5, Morris county, N. J.; bids Oct. 15.

190 tons, physics building, University of Cincinnati, Cincinnati; M. J. Roche Construction Co., Cincinnati, contractor.

125 tons, grade separations, Lincoln Park, Ill.

E. W. Bliss Co., Brooklyn, N. Y., has omitted the quarterly dividend of 25 cents on the common stock. Regular quarterly dividends on the three preferred classes were declared, all payable Oct. 1 to record Sept. 22.

Awards Compared

	Tons
Awards, week ended Oct. 3	5,817
Awards last week	4,981
Awards two weeks ago	2,554
Awards this week in 1930	4,193
Av. weekly awards, 1930	6,990
Av. weekly awards, 1931	6,881
Av. weekly awards, Sept.	6,672
Total awards to date, 1930	285,279
Total awards to date, 1931	282,153

Chicago Plants Awarded Plaques for Safety

A number of industrial concerns in the Chicago district were cited for establishing the lowest accident frequency rate in their particular groups, for the six months ended June 30, last, at the annual autumn dinner of the Chicago Safety council, Sept. 23. Thirty-seven firms received safety plaques.

In the inter-plant contest, these concerns were among those winning awards: Pettibone-Mulliken Co.; Reynolds Electric Co., Commonwealth Edison Co., Solar-Sturges Mfg. Co.; Western Electric Co.; Victor Chemical Works; Wyman Gordon Co., Ingalls-Shepard division; Youngstown Sheet & Tube Co., South Chicago works; Union Drawn Steel Co.; Pullman Car & Mfg. Corp., West Pullman, Ill., works; and Whiting Corp.

Finds Engineers' Salaries Top Unskilled Men

Engineers trained in technical colleges earn approximately $500 more per year than men with inferior training between the ages of 25 and 35, when they forge rapidly ahead until at 45 their earnings exceed by more than $1000 those of men without technical training, or with training of subcollegiate rank, according to a report of a survey by the American Society of Mechanical Engineers.

Men with the engineering B. S. degree continue to hold this lead over subcollegiate and nontechnical men even in the later age groups, declared the report, prepared by the society's committee on the economic status of the engineer under the direction of Prof. Elliott Dunlap Smith, of Yale university.

That the earning power of the typical mechanical engineer is greatest at the age of 55, and his maximum professional income is $7600, was revealed in a previous report.

Simplification Is Dropped

Washington—The proposed simplified practice recommendation for arbor holes for circular saws and grinding wheels used on portable electric handsaws has been cancelled by the bureau of standards because of insufficient support. The sizes and

Strip

Shading of $2 Done on Cold-Rolled Material — Automotive Tonnage Lowest of Year

STRIP PRICES, PAGE 59

Pittsburgh—Shipments of strip steel to the automotive industry are at the lowest level of the year and producers look for little improvement for several weeks. Prices are well maintained on new business at 1.55c and 1.65c for hot strip and 2.15c to 2.25c for cold strip. Quotations on low-chrome stainless steel cold strip have been reduced 3 cents a pound to 25.00c and 26.50c for the two grades. Strip mill operations are tending downward, currently averaging 15 to 20 per cent for hot mills and slightly less for cold mills.

New York—Strip demand is quiet, with hot-rolled unchanged at 1.55c and 1.65c, Pittsburgh, and cold-rolled at 2.15c, Pittsburgh. Orders generally are for early shipment.

Philadelphia — Hot-rolled strip steel is dull, at 1.55c and 1.65c, Pittsburgh, according to width. Cold-rolled is usually quoted 2.15c, Pittsburgh.

Youngstown, O.—A fair amount of new business is current in hot-rolled steel strip. Demand from auto parts-makers is merely fair, the expected October-November bulge now being pushed back for a month or six weeks. Makers of cold-rolled strip show signs of more aggressiveness. Some smaller mills have, temporarily at least, abandoned their price conservatism. Prices of 2.10c, Pittsburgh and Cleveland, have been made, while 2.05c and even down to 2.00c has been done in instances. This has resulted in some additional specifications coming out, but orders still continue small.

Cleveland—Cold-rolled strip, still in a light market, has displayed weakening price tendencies. The 2.15c Cleveland base has been shaded $1 to $2 on several transactions. Cold rollers continue to send in meager specifications for hot-rolled stock without prices attached, thus indicating the firmness with which 1.55c and 1.65c, Pittsburgh, are being made on the two widths of hot. Following a mid-September spurt in ordering, hot-rolled has subsided into the lethargy of August trading. A fair volume of inquiry still is before the market, but does not close.

Chicago—Individual inquiries for hot-rolled strip are a trifle larger, although the volume of orders has not increased. The October outlook for automotive shipments is not encouraging. Hot-rolled prices are steady at 1.65c, Chicago, for 6 1/16- to 24-inch, while the narrow sizes are quoted 1.75c, Chicago. A few small fourth quarter contracts for cold-rolled strip have been made at 2.15c, Pittsburgh-Cleveland.

Operations Average 29 Per Cent Week Ended Oct. 3

Pittsburgh—Ingot production continues at 26 per cent with little improvement in prospect for the current week. Blast furnace operations are higher with the lighting of one stack, idle since spring, by the Pittsburgh Steel Co. This gives the district nine active steelworks furnaces out of 54. Finishing mill schedules generally are steady with sheets and tin plate at 30 and 40 per cent, respectively. Strip is lower at 15 to 20, pipe continuing 25 to 30.

Buffalo—Steelworks continue at 35 per cent capacity, the rate which has been maintained for the past ten days. With the resumption of operations of the local plant of the Republic Steel Corp. gain of five points in operations is indicated for this week. There are now 13 open hearths making steel in the district.

Youngstown, O.—Steel operations averaged 30 per cent capacity in the week ended Oct. 3, a nine-point decline from the preceding week. Sharp decline in open-hearth production for one of the leading independents accounted for the drop. Mill operations during the first few days of this week are expected to be little changed at near the 30 per cent mark, though production was expected to be several points higher if tentative plans of a valley ingot producer to expand operations were carried out.

As of Oct. 3, 23 open hearths were melting, one more than at the beginning of that seven-day period.

Sheet & Tube operations last week averaged 20 per cent capacity. Operations for Republic Steel held steadily last week at 35 per cent. Sharon Steel Hoop activity last week averaged 20 per cent.

Cleveland—Steel production is off two points beginning this week to 33 per cent capacity, resulting from taking off of one independent open hearth the latter part of last week. In all 11 of 34 open hearths are in operation. Last week the steel rate was 35 per cent.

Philadelphia—Ingot production continues into this week at 30 per cent engagement for the mills in this district. A leading mill is down about one point to slightly over 30 per cent.

Chicago—This week's ingot production continues at 28 per cent, the same as last week. No change is contemplated in open-hearth or steelworks blast furnace schedules. Nine of the district's 36 steelworks blast furnaces are active. Finishing mill operations continue to average about 30 per cent.

Birmingham, Ala.—Thirty per cent capacity has been maintained in steel operations based in ingot production. Eight and nine open-hearth furnaces are producing ingots. No change in schedule is planned for coming week.

Warehouse Sales Develop Only Occasional Gains

Warehouse Prices, Page 81

Pittsburgh—Improvement is almost entirely lacking in sales, which generally hold near the year's lowest level. Small-lot orders predominate, with prices unchanged.

Philadelphia—Warehouse trading is light and unchanged. Prices are steady.

Cleveland—Since buying is in very small quantities, warehouse prices are firm, in fact tending upward in some isolated instances. Small orders are piling up the number of mixed carload shipments from mills to warehouses leading to perplexities as to imperative delivery demands.

Cincinnati—Volume remains on a par with the last few weeks, buyers continuing their hand-to-mouth purchases. Prices are unchanged.

Chicago—Barely perceptible improvement in steel warehouse sales has been noted in the last several days. September business gained only a shade over August due alone to buying at the close of September. Prices are unchanged.

St. Louis—Demand for steel goods from store has developed moderate improvement since the third week in September. Seasonal requirements and long deferred replacement needs are beginning to appear. According to two leading interests, prospects by the general manufacturing trade are better than in a number of months.

Pipe

Lincoln, Nebr., Work Placed on Cast Iron Basis—Line Purchasing Has Subsided

PIPE PRICES, PAGE 81

Chicago—Several filtration plant additions have provided moderate orders of miscellaneous sizes of cast pressure pipe. Other municipal activity is light. Delivered quotations for the 6 to 24-inch sizes continue irregular. Peru, Ind., has purchased 200 tons for a filtration plant. Charleston, Ill., will buy about 500 tons for filtration work.

Boston—Keen competition from outside foundries reacts toward low prices in the cast pipe market. New London, Conn., is taking bids on approximately 300 tons of small sizes. Boston is expected to take bids on a small lot soon. Massachusetts has opened bids on 350 tons for a hospital, Mansfield, Mass.

New York—Cast prices are weak and inquiry continues light. New York's inquiry for a substantial tonnage of 30-inch pipe has been delayed. Hartford, Conn., purchased close to 400 tons of six and eight-inch.

Philadelphia—Bids open Oct. 7 on 3500 tons of steel pipe ranging from 12¾-inch to 20-inch for the municipal drive, west side, Schuylkill river, Philadelphia.

Pittsburgh — Seasonal improvement in standard pipe demand has been slight and production is little changed. The line pipe market is devoid of all but small lots of an active nature while demand for oil country goods continues light. Pipe mill operations continue around 25 to 30 per cent.

Cleveland—Two plate fabricating interests in this district were figuring the large job recently let at Lincoln, Nebr. The project called for alternate bids of cast iron, concrete reinforcement, or 36-inch fabricated steel pipe. On the latter alternate Alco Products Co. was low, with Biggs Boiler Co., Akron, O., figuring also, although the award was finally made on a cast iron basis.

Birmingham, Ala.—Order for 32,000 tons of various sizes cast iron pressure pipe and valves from Lincoln, Nebr., where a waterworks system is to be completed at cost of $1,500,000 has been placed. United States Pipe & Foundry Co. is resuming operations at its North Birmingham, Ala., shops this week.

Cast Pipe Placed

32,000 tons various sizes with valves, to United States Pipe & Foundry Co., East Burlington, N. J., and National Cast Iron Pipe Co., Birmingham, Ala.

200 tons, miscellaneous sizes, filtration plant for municipal water works, Peru, Ind., pipe to be purchased through C. J. Burke, Peru, Ind., contractor.

Steel Pipe Placed

700 tons, line for Pennsylvania Power & Light Co., Allentown, Pa., greater portion to National Tube Co., Pittsburgh, with a part going to A. O. Smith Corp., Milwaukee, and the remainder to an unnamed seller.

Cast Pipe Pending

Unstated tonnage, sluice gates, miscellaneous iron work and fittings, White City sewage plant, Cleveland; bids close Oct. 23.

Steel Pipe Pending

3500 tons, 12¾ to 20-inch, municipal drive, west bank of Schuylkill river, Philadelphia.

500 tons, miscellaneous sizes for filtration plant addition, Charleston, Ill.; Consoer, Older & Quinlan Inc., Chicago, engineers; bids Oct. 5.

155 tons, 12-inch, Pontiac, Mich.; bids in.

Rivets Get Second Cut Of $5 — Bolts, Nuts Steady

Bolts, Nuts, Rivets Prices, Page 59

Pittsburgh—A second reduction of $5 per ton on large structural rivets has been put in effect as of Sept. 29, following close competition among producers, bringing rivets to 2.25c, Pittsburgh. Fourth quarter contracting for bolts, nuts and rivets is practically complete and in about the usual volume. Prices are unchanged at 73 and 10 off for bolts and nuts. Specifications continue quiet and show no improvement over the rate a month ago. Railroads are light buyers and fabricating shops are taking only small lots of rivets.

Philadelphia—Large rivets have been cut $5 a ton to 2.25c, Pittsburgh. Bolts and nuts are unchanged.

Cleveland—Bolt and nut contracting for fourth quarter has been virtually completed. No current improvement last week in demand was apparent as the price holds at 73 and 10 off list. Large structural rivets have been cut $5 a ton for the second time in a month. The new base price is 2.25c, Cleveland, for carload lots. This decline has arisen from the competitive action locally of two rivet manufacturers. The 2.25c base price now in effect compares with 2.75c base Sept. 8.

Chicago—Western producers of large rivets are following the reduction announced in the East of another $5 a ton. This makes the new quotation 2.35c, Chicago. A previous $5 cut became effective here Sept. 15. Bolts and nuts, are quoted at 73 and 10 off, but few forward contracts are being made on that basis.

Tin Plate Price Is Reduced $5 Per Ton

Tin Plate Prices, Page 59

Pittsburgh—Tin plate has been reduced $5 a ton to $4.75, Pittsburgh, per base box, effective Oct. 1. The American Sheet & Tin Plate Co. announced a reduction on that date and other producers are following. This price compares with the market during the past 12 months of $5, and equals the lowest post-war quotations. The market was $4.75 from Nov. 3, 1921, to Feb. 26, 1923, when it was advanced to $4.95. The top of the market over the past five years was $5.35, prevailing from Nov. 15, 1928, to Dec. 31, 1929, when it was reduced to $5.25. The latter figure obtained until Oct. 1, 1930, when the $5 price was quoted. Tin plate demand and operations are fairly steady, output holding at slightly above 40 per cent. Little change is noted in requirements for packers' cans or general line cans. Mills have not commenced rolling tin plate in anticipation of early 1932 requirements.

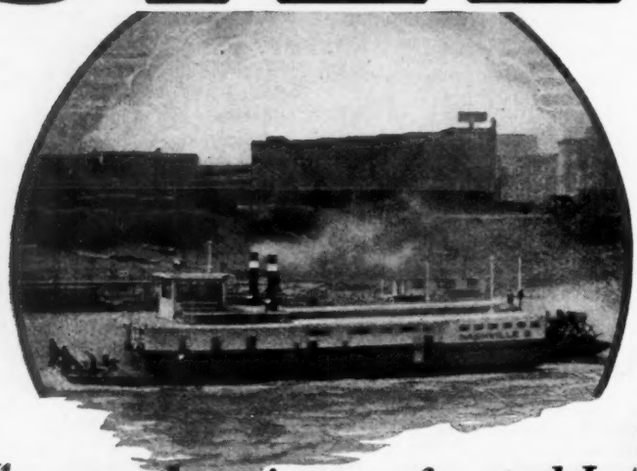
New York—A reduction of 25 cents, to $4.75, Pittsburgh, has been announced on tin plate for first half delivery in 1932. This reduction is believed to reflect, as one factor, the decline in pig tin.

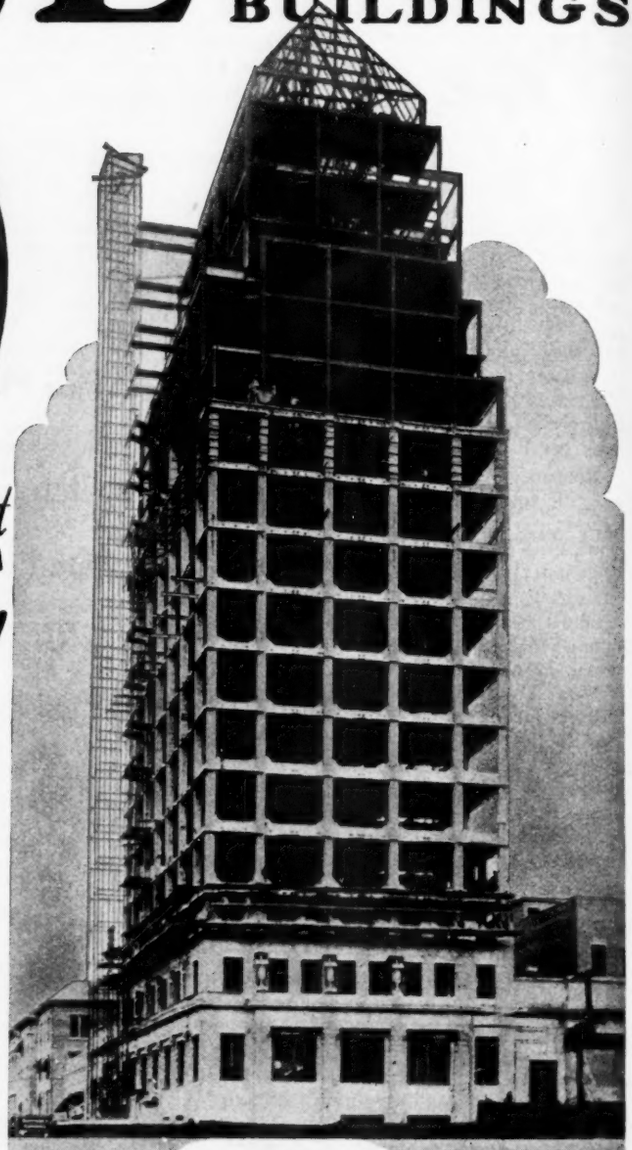
Hauls Pine for Patterns

In late September the Rock Island railroad hauled a special train of 70 cars of sugar pine lumber from the Sierra mountains of California, from trees over 700 years old and standing as high as 200 feet, to eastern destinations. This shipment, containing about 1,500,000 board feet, will be used largely for making foundry patterns and flasks.

Hardware exports from the United States in the first half of 1931 included 36,950 dozen padlocks.

STEEL FOR BOATS BRIDGES OR BUILDINGS





Wherever there is a use for steel-Let

TENNESSEE

figure on your requirements. Quality products backed by careful inspection—prompt shipments, with intelligent cooperation through understanding of the customer's needs—these are some of the reasons which make Tennessee a desirable source of supply.

Products: Structural Shapes, Plates, Bars and Small Shapes, Sheets (Blue Annealed, Black and Galvanized), Rails and Accessories, Forgings Castings, Semi-Finished Products, Pig Iron.

US STEEL

Tennessee Coal, Iron & Railroad Co.

General Offices: Brown-Marx Bldg., BIRMINGHAM, ALA.

Subsidiary of United States Steel Corporation

Railroads

Santa Fe May Buy 60,000 Tons Rails—Mills Now Assured October Operations

TRACK MATERIAL PRICES, PAGE 59

New York—Domestic freight car awards in September totaled 503 cars, of which 500 refrigerator cars are to be built in the Pacific Fruit Express Co.'s own shops. The total compares with 1104 cars in August, 576 in September of last year and brings bookings for 1931 up to 9018. This latter figure compares with 35,680 in the first nine months of 1930, a total of 70,528 in the corresponding period of 1929. Further comparisons are:

	1931	1930	1929	1928
Jan.	100	5,072	13,196	4,160
Feb.	50	17,027	15,944	10,220
March	2,166	6,118	12,023	2,958
April	2,798	1,997	8,205	6,043
May	20	1,392	7,562	2,531
June	1,910	998	5,886	2,422
July	367	1,389	341	582
Aug	1,104	1,111	2,854	677
Sept.	503	576	4,517	1,378
9 mo.	9,018	35,680	70,528	30,971
Oct.	.....	4,116	19,506	2,853
Nov.	.....	2,621	6,361	6,140
Dec.	.....	2,729	9,710	4,799
Total	.....	45,146	106,105	44,763

Approximately 720 tons of rolled steel will be required for 48 steel gondolas for the Texas Co. These cars bring the total number of freight cars actively pending up to about 150. The Chesapeake & Ohio is inquiring for 1200 tons of fabricated car parts for delivery during the current quarter for repair work.

To stimulate the sale of rails, F. J. Lisman, of the investment house of F. J. Lisman & Co., has proposed that credit be advanced to the railroads, in much the same manner as for rolling stock. Railroad mortgages require that title to the rails pass to the railroads, but an instalment payment plan would provide the mills with needed business and the cash position of the steel industry is sufficiently strong to warrant the extension of credit, it is claimed.

Buffalo—Bookings of rails scheduled for October or first quarter rolling at the Lackawanna plant of the Bethlehem Steel Co. are well in excess of 10,000 tons. Among recently placed orders which are expected to be assigned to Lackawanna are 7000 tons from the Chesapeake & Ohio and 3500 tons from the Lackawanna railroad.

Cleveland—No inquiries have as yet been issued by the Chesapeake & Ohio for fastenings to accompany its 45,000-ton rail order awarded early last week. Last year about 10,000 tons of fastenings were allocated among Wheeling Steel Corp., Inland Steel Co. and Illinois Steel Co. At the same time the Tredgar Co. took 5000 kegs of spikes. The Nickel Plate and Erie roads are not expected out until some time after the turn of the year with their needs for 1932 rails. The Erie bought 41,000 tons of rails in the fall of 1930, its last rail purchase. Fourth quarter bar, plate and shape needs of several of the local carriers have not yet been closed.

For car and other railroad repairs, Canton Car Co., Canton, O., has just purchased approximately 4500 tons of rolled steel products.

Chicago—Santa Fe is expected to have an inquiry before the market before long for 50,000 to 60,000 tons of rails. Rail relases now on October books assure 20 to 25 per cent rail mill operations for this month. Spot releases in the last few days total about 1500 tons. About 60 per cent of the Chesapeake & Ohio rail order for 45,000 tons has been allocated in this district. Local shops of Merchants Despatch Inc. have gone on a three-day working basis following virtually full operations for the last year, chiefly on repairs. General American Tank Car Corp. is completing an order for refrigerator cars for its own leasing purposes. Work has been started on 1500 side frames for Chesapeake & Ohio car repairs.

Chicago, South Shore & South Bend railroad has completed its 1931 construction program, which concluded rehabilitation of old shop buildings at Michigan City, Ind., tie-plating of 72 miles and replacing of rails on part of its trackage.

Car Orders Placed

Chesapeake & Ohio, 1500 side frames, railroad car repairs, to several shops.

Rail Orders Placed

Columbia Contract Co., Portland, Oreg., 855 tons, 75-pound relay steel rails for tramway extension improvement job, Columbia river south jetty, Oregon, to Hofius Steel & Equipment Co., Seattle.

Rail Orders Pending

Santa Fe, 50 000 to 60,000 tons; inquiry expected soon.

Louisiana Tractor & Equipment Co., Gueydan, La., a suburb of New Orleans, has changed its name to the Louisiana Road Machinery Co.

Wire Buying Holds Back; Jobbers' Orders Larger

Wire Prices, Page 59

Chicago—Jobber shipments of merchant wire products from mill stock are running ahead of actual dealer sales, indicating that jobbers expect further autumn sales in farm wire products. Prices are not well established for fourth quarter. Occasional orders for manufacturers' wire at 2.25c, Chicago or western mills, largely are for 30 to 60 days and seldom cover the remainder of the year. Steel electrical wire has been affected adversely by the low copper market.

Worcester, Mass.—Wire is strong at 2.30c, Worcester. Production is stationary and shipments are slightly under those of last month.

Buffalo—Purchases of wire are being affected by seasonal conditions and are declining. The summer months have brought wire demand substantially better than that for most materials it is reported here. Present production of wire and its products here represents 50 per cent of the open-hearth capacity.

Pittsburgh—Wire shipments are expected to benefit the first half of this month as a result of the closing out of old contracts. Some jobbers have taken advantage of lower prices on third quarter contracts to add to stocks but lack of a change in the manufacturers' wire market leaves activity there at its recently depressed level. Fourth quarter contracting in jobbing products is fairly active, but a test of prices will be deferred until late this month. Contracts are being signed at $1.90 to jobbers for wire nails with the dealers' market 10 cents higher. Plain wire continues 2.20c and wire rods $35.

Cleveland—Wire and nail specifications have not been improved and the various wire consuming customers continue to take only small lots. Prompt delivery is the keynote, with sometimes virtually impossible dates demanded. Of continued interest is the firmness of prices, which are $1.90 a keg for nails, 2.20c base on plain wire to the manufacturing trade, and $35, a ton for rods.

Total property investment of railways in the United States in 1911 was over 14 billion dollars and in 1930 it was over 26 billion dollars. This is an increase of 76 per cent.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago furnace	$17.50
Pittsburgh, dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley furnace	17.00
Cleveland fur., local del.	17.00
Philadelphia, delivered	16.76 to 17.26
Virginia furnace	17.50
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.90 to 20.40
Buff., all-rail, Newark	18.28 to 18.78
Ala., Bir. fur., local del.	12.00
Alabama, del. Chicago	17.01
Alabama, del. St. Louis	15.42
Alabama, del. Cincinnati	14.69 to 15.19
Ala., Phila., dock del.	16.00 to 16.25
Ala., Balt., dock del.	16.00
Alabama, New York dock	16.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	14.69 to 15.19
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	17.50
Buff., all-rail, Brooklyn	20.90 to 21.40
Buffalo, all-rail Newark	18.78 to 19.28
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila	17.26 to 17.76

FOUNDRY, NO. 1X

Buffalo fur., local del.	18.50
Eastern, del. Phila.	17.76 to 18.26

MALLEABLE

Valley furnace	17.00
Cleveland fur., local del.	17.00
Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Chicago, furnace	17.50
Buffalo fur., local del.	17.50
Eastern Penna., delivered	18.26 to 20.41
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	16.00 to 16.50
Pittsburgh, delivered	16.63 to 17.63
Eastern Penn., del.	16.50
Buffalo fur., local del.	16.50 to 17.00
Montreal, delivered	20.50
Valley, furnace	17.00

BESSEMER

Valley furnace	17.00
Pittsburgh, delivered	18.13 to 18.63
Pittsburgh, furnace	17.50

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chi.	25.04

SILVERY

Jackson County, O., fur. in per cents: 6—$20; 7—$20.50; 8—$21; 9—$21.50; 10—$22; 11—$23; 12—$24; 13—$26.

BESSEMER FERROSILICON

Jackson County, O., fur. in per cents: 10—23; 11—$24; 12—$25; 13—$27; 14—$29; 15—$31; 16—$33.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.40 to 2.50
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.70 to 9.10
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens, Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	10.00
North African low phosphorus	8.50
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	8.50 to 9.00
Newfoundland fdy., 55%	8.50
Tungsten, spot and future short ton unit, duty paid	$11.25 to $11.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 cents
South African, 52%	24 to 26 cents
South African, 49-51%	23 to 24 cents
South African, 44-47%	22.50 cents
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$40.00
Missouri	37.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 35.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	40.00
Joliet, Ill., East Chicago, Ind.	49.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Balt. base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$29.00
Pittsburgh, bessemer	29.00
Youngstown	29.00
Cleveland	29.00
Philadelphia	34.30
Chicago	30.00
Forging, Chicago	35.00 to 36.00
Forging, Pittsburgh	35.00
Forging, Philadelphia	39.30

SHEET BARS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00
Chicago	30.00

SLABS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00

WIRE RODS

Pittsburgh, Cleveland	35.00
Chicago	36.00

SKELP

All grades, Pittsburgh	1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$85.00
*Ferromanganese, del. Pittsburgh	89.79
Spiegeleisen, 19-20%, domestic fur. spot†	30.00
Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con. del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.20
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	150.00
Do, one-ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50
Ferromolybdenum, stand. 50-60 per cent, per lb.	$1.00
Cal. Molybdate, lb. cont.	.85

†Carloads. Differentials apply to quant. *To users of carloads to 500 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$13.00
Washed gravel, import duty paid east, tide, gross ton	18.50

TRADE
C I C
MARK
Cleveland-Cliffs

Iron Ore
Pig Iron
Coal
Coke

THE CLEVELAND-CLIFFS IRON CO.
Cleveland, Ohio

Pig Iron

Larger Inquiries Noted in Some Markets—Competition Keen in Northern Districts

PIG IRON PRICES, PAGE 70

Pittsburgh—Shipments of pig iron show insufficient change to indicate a definite upturn. A few foundries are taking larger lots than a month ago, but this is offset by lighter requirements of some leading consumers. New business consists of occasional small lots, and no inquiry is pending. Valley producers are encountering increased competition from Cleveland and Buffalo furnaces in this district, the latter usually quoting on a $15 base, or about 60 cents below the usual market here of $18.26, figured from the valley or Pittsburgh furnaces. Valley prices continue $17 for No. 2 foundry, bessemer, malleable and basic.

Boston—Buffalo furnaces are taking the bulk of pig iron business in the Boston market. One central Massachusetts melter is more active, with export orders. Sales in the week totaled about 800 tons. Prices are unsettled.

New York—Pig iron sales are light. Total business in the week is estimated at 2000 to 2500 tons. Included in inquiries is one for 200 tons, for shipment outside the district. Buffalo iron is $15 to $15.50, furnace; southern iron, $11, furnace; and eastern Pennsylvania iron, $15.75 to $16.25, furnace.

An inquiry for 10,000 tons of foundry iron for a New Jersey plant developed late last week.

Philadelphia—While one lot of 10,000 tons of pig iron is pending for shipment outside this district the local market is dull. Eastern Pennsylvania iron is moving generally at $16 to $16.50, base, furnace, and southern iron at $11, base, furnace.

Buffalo—Belief is growing that Buffalo furnaces again have dipped to $15 base on eastern inquiry. The effort to increase the price to $15.50 or $16 appears to have failed. District prices are unchanged. Current inquiry is small, but some releases are slightly larger than recently.

Cincinnati—The fourth quarter has opened with few pig iron consumers in this district covered on requirements. A central Ohio melter is inquiring for 250 tons of northern foundry iron, and another inquiry for 500 tons is pending. The quotation of $11, base, Birmingham, has withstood a recent test.

Cleveland—Inquiry is more active and points to improved sales. One seller has received inquiries from all districts in Ohio this week, some for fourth quarter and a few for the first quarter. Cleveland furnace interests have been competing in other districts, the same as outside furnaces have been offering iron in Cleveland recently. In some instances this has resulted in prices below $16, base, Cleveland, for delivery to distant points, though $17, base, furnace, still is representative of the market here for Cleveland iron. Melters here continue operating at a low rate, and the local market is inactive. September sales and shipments were slightly ahead of those of August.

Chicago—Implement makers offer the most likely program for later this month. The foundry melt is unchanged at 20 to 25 per cent. Sales of pig iron have been negligible the last few days. Several buyers whose stocks have become low recently have been showing more interest. Recent sales of several hundred tons of steelworks iron in northern Illinois at slightly under the market have had no apparent adverse effects on the $17.50, base price for northern iron.

St. Louis—Breaking of a severe heat wave has been followed by heavier shipments of pig iron to some plants and the lifting of embargoes by others. Inquiry for the fourth quarter is unusually light, melters buying their iron in small lots as needed. Producers' stocks are large; in some instances the heaviest in many years. Prices are steady.

Birmingham, Ala.—Sales promise to improve in October. A few small orders were placed during the week from the Middle West and Atlantic coast points. August production of pig iron in this district was less than that of September.

Toronto, Ont.—Only three of the 11 blast furnaces in Canada are in operation. The routine number of small sales are noted, 500 tons being booked here during the week. Prices are unchanged.

Ferroalloy Shipments At Year's Lowest Level

Ferroalloy Prices, Page 70

Pittsburgh—Shipments of ferroalloys are moving opposite to the usual seasonal trend, recently being at the lowest level of the year. Dullness continues in spot buying with most business placed against contracts. Ferromanganese continues $89.79, delivered, with spiegeleisen $30, furnace.

New York—Ferromanganese specifications are moving slowly at $85, duty paid, for material in carlots. Domestic spiegeleisen, 19 to 21 per cent, is $30, furnace.

Iron Ore Shipments Half Of Last Year's Volume

Iron Ore Prices, Page 70

Cleveland—The movement of Lake Superior iron so far this year is approximately half that in the comparable period last year—19,952,768 tons, compared with 39,064,009 tons, according to current report from the Lake Superior Iron Ore association. It appears more evident the total for this season will be around 25,000,000 tons. The movement from upper lake docks in September amounted to 4,178,761 tons, down 885,926 tons from August. The market continues inactive.

Semifinished Sales Small; Contracts Lacking

Semifinished Prices, Page 70

Pittsburgh—Fourth quarter contracting for semifinished steel is almost entirely lacking, consumers placing small orders as the occasion warrants. New buying continues light and unimproved since a month ago. The market usually is $29, Pittsburgh, for rerolling billets, slabs and sheet bars with forging billets and wire rods, $35.

Cleveland—September bookings of sheet bars, billets and slabs, for the leading merchant producer here exceeded those of August by a narrow margin. Prices for fourth quarter are unchanged at $29, base, Cleveland, and Youngstown, O., though few contracts are being placed.

Chicago—Fair stocks of semifinished steel have accumulated. September shipments of sheet bars made small gains. Sheet bars and small billets are quoted $30, Chicago, base. Forging billets are $35 to $36, Chicago, according to grade.

Approximately 1000 tons of ornamental iron castings for the Thirtieth street station of the Pennsylvania rail-road, Philadelphia, have been placed with the Empire City Iron Works, Brooklyn, N. Y.

Scrap

Open-Hearth Grades Show Further Decline—Producers Continue to Hold Back Supplies

Chicago—Highly sensitive to outside influences, the steel scrap market lacks a substantial trend. The decline of steelmaking grades last week is followed by evidences of strength. Negotiations for a sale of heavy melting steel at $8.50, the price that prevailed before the drop of 25 cents a week ago, may not result in a sale, but the market as a whole does not represent a well defined weakness. Further evidence of the policies of a number of western railroads to withhold scrap from the market because of low prices is noted in the release by the Chicago & North Western railroad of only about 1000 tons.

Boston—Scrap prices in New England are irregular. Sales are limited to a few carloads. The Worces-

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.50 to 8.50
Boston, dealers	4.10 to 4.60
Buffalo, No. 1	9.00 to 9.50
Buffalo, No. 2	7.75 to 8.25
Chicago	7.75 to 8.25
Cinci., deal.	7.25 to 7.75
Cleve., No. 1	8.50 to 9.00
Cleve., No. 2	7.50 to 8.00
Det., No. 1 deal.	6.25 to 6.75
Det., No. 2 deal.	5.00 to 5.50
E. Pa. del. mill	8.00 to 9.00
N. Y. deal. R. R.	5.00 to 6.50
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	4.00 to 4.50
Pitts., No. 1	10.25 to 10.75
St. L. No. 1 sel.	8.00 to 8.20
Federal, Ill.	7.50 to 8.00
Granite City, Ill.	7.00 to 7.50
Valleys, No. 1	10.25 to 10.75

COMPRESSED SHEETS

Buffalo, dealers	7.75 to 8.25
Chi., (Factory)	7.00 to 7.50
Cleveland	7.50 to 7.75
Detroit, dealers	6.25 to 6.75
E. Pa. new mat.	8.00 to 9.00
Pittsburgh	10.25 to 10.75
Valleys	9.50 to 10.00

BUNDLED SHEETS

Buffalo	5.50 to 6.00
Cinci., deal.	6.75 to 7.25
Cleveland	6.50 to 7.00
Eastern Pa.	6.50 to 7.00
Pittsburgh	9.75 to 10.25
St. Louis	5.00 to 5.50

SHEET CLIPPINGS LOOSE

Chicago	3.75 to 4.25
Cincinnati	4.00 to 4.50
Detroit, dealers	3.50 to 4.00
St. Louis	5.00 to 5.50

STEEL RAILS SHORT

Birmingham	10.75 to 11.50
Boston, dealers	3.10 to 4.60
Buffalo	12.00 to 12.50
Chicago (3 ft.)	10.00 to 10.50
Chicago (2 ft.)	10.75 to 11.25
Cinci., deal.	12.50 to 13.00
Detroit, deal.	11.00 to 11.50
Pitts. (open-hearth, 3 ft. and less)	12.50 to 13.00
St. Louis	12.00 to 12.50

STOVE PLATE

Birmingham	6.50 to 7.00
Boston, con.	5.00 to 5.50
Buffalo	8.25 to 8.50
Chicago, net	6.00 to 6.50
Cinci., deal. net	4.50 to 5.00
Det., net deal.	4.00 to 4.50
Eastern Pa.	7.50 to 8.00
N. Y., deal. mill	4.75 to 5.50
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	11.00 to 11.50
Chicago	9.25 to 9.75
Eastern Pa.	13.00
Pittsburgh	11.50 to 12.00
St. Louis	8.50 to 9.00

ANGLE BARS—STEEL

Chicago	9.25 to 9.75
St. Louis	7.50 to 8.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	12.75 to 13.25
Cleveland bil. and bloom crops	12.00 to 12.50
Eastern Pa.	13.50 to 14.00
Pittsburgh billet bloom crops	14.00 to 14.50
Pitts sheet bar crops	13.00 to 13.50

FROGS, SWITCHES

Chicago	8.50 to 9.00
St. Louis	8.50 to 9.00

SHOVELING STEEL

Chicago	7.75 to 8.25
Cleveland	6.50 to 7.00
St. Louis	7.50 to 8.00

RAILROAD WROUGHT

Birmingham	7.50 to 8.00
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	7.00 to 7.50
Buffalo, No. 2	9.00 to 9.50
Chicago, No. 1	8.00 to 8.40
Chicago, No. 2	7.75 to 8.25
Cinci., No. 2	7.25 to 7.75
Eastern Pa.	9.50
N. Y., No. 1, deal.	9.00 to 9.50
Pitts., No. 2	10.25 to 10.75
St. Louis, No. 1	5.00 to 5.50
St. Louis, No. 2	7.50 to 8.00

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	9.50 to 10.00
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	7.75 to 8.25
Chicago, No. 1	6.50 to 7.00
Cinn., No. 1 dl.	6.00 to 6.50
Cinn., No. 2	3.50 to 4.00
Cleve., No. 2	6.25 to 6.75
Det., No. 1 new deal.	5.00 to 5.50
St. L., No. 1	6.00 to 6.50
Val. new No. 1	9.25 to 9.75

MACHINE TURNINGS

Birmingham	3.50 to 4.00
Boston, dealers	1.75 to 2.00
Buffalo	4.75 to 5.25
Chicago	4.25 to 4.75
Cinn., deal.	3.75 to 4.25
Cleveland	5.00 to 5.50
Detroit	3.75 to 4.25
Eastern Pa.	5.00 to 5.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.50 to 8.00
St. Louis	3.00 to 3.50
Valleys	7.75 to 8.25

BORINGS AND TURNINGS
For Blast Furnace Use

Boston	1.50 to 1.75
Buffalo	6.00 to 6.50
Cinn., deal.	4.50 to 5.00
Cleveland	6.50 to 7.00
Detroit, deal.	4.75 to 5.25
Eastern Pa.	5.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.50 to 8.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.50 to 4.00
Boston, chem.	7.00 to 7.25
Boston, deal.	1.50 to 1.75
Buffalo	6.00 to 6.50
Chicago	4.00 to 4.50
Cinn., deal.	3.75 to 4.25
Cleveland	6.50 to 7.00
Detroit, deal.	4.75 to 5.25
Eastern Pa.	5.00 to 6.00
E. Pa., chem.	10.50 to 12.00
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.50 to 8.00
St. Louis	5.50 to 6.00

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	6.50 to 7.00
Chicago, net	5.75 to 6.25
Cincinnati	5.50 to 6.00
Eastern Pa.	7.50 to 8.00
N. Y., deal.	5.00 to 5.50
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	7.50 to 8.00
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	5.50 to 6.00

FORGE SCRAP

Boston, del.	2.00 to 2.25
Chicago	11.00 to 11.50
Eastern Pa., del.	8.00 to 8.50

ARCH BARS, TRANSOMS

Chicago, net	9.00 to 9.50
St. Louis	7.75 to 8.25

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	7.50 to 8.00
Chi., steelworks	7.00 to 7.50
Cleveland	6.75 to 7.00
Eastern Pa., del.	7.50 to 8.50
Pittsburgh	9.50 to 10.00
St. Louis	6.50 to 7.00

STEEL CAR AXLES

Birmingham	11.50 to 12.00
Boston, ship. pt.	11.00 to 12.00
Buffalo	14.50 to 15.00
Chicago	12.90 to 13.45
Eastern Pa.	17.00 to 18.00
St. Louis	11.50 to 12.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	8.95 to 9.50
N. Y., deal.	9.00 to 9.50
St. Louis	9.00 to 9.50
E. Penna.	16.00

CAR WHEELS

Birming., iron	8.50 to 9.50
Boston, iron	14.00 to 14.50
Buffalo, iron	10.50 to 11.00
Buffalo, steel	11.00 to 11.50
Chicago, iron	9.50 to 10.00
Chi. rolled steel	9.50 to 10.00
Cincinnati, iron	9.50 to 10.00
E. Pa. steel	10.50 to 11.00
E. Pa. iron	12.50 to 13.00
Pitts. iron	11.00 to 11.50
Pitts., steel	11.50 to 12.00
St. Louis, iron	7.00 to 7.50
St. Louis, steel	8.50 to 9.00

NO. 1 CAST SCRAP

Birmingham	8.50 to 9.00
Buffalo (mach.)	10.25 to 10.75
Boston, textile	10.00 to 10.50
Chicago, mach.	9.80 to 10.35
Chi., railroad	8.70 to 9.25
Chicago, agri.	8.40 to 8.95
Cinn., mach. cup., gross	12.25 to 12.75
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa., cupola	12.50 to 13.00
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	12.00
Pitts., cupola	10.00 to 10.50
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	8.50 to 9.00
St. L. No. 1	7.50 to 8.00

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast.	11.50 to 12.50
Buffalo, break	6.75 to 7.25
Cleve., break	6.00 to 6.50
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	5.50 to 6.00
Eastern Pa.	9.50 to 10.00
N. Y. No. 1 dl.	7.00 to 7.50
N. Y., break, dl.	6.50 to 7.00
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	13.00 to 13.50
Buffalo	10.00 to 10.50
Chicago, agri.	8.00 to 8.50
Chicago, R. R.	8.50 to 9.00
Cinci., R. R. del.	10.25 to 10.75
Cinci., agri. del.	10.00 to 10.50
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.50 to 10.00
St. Louis, rail	6.75 to 7.25

RAILS FOR ROLLING
5 feet and over

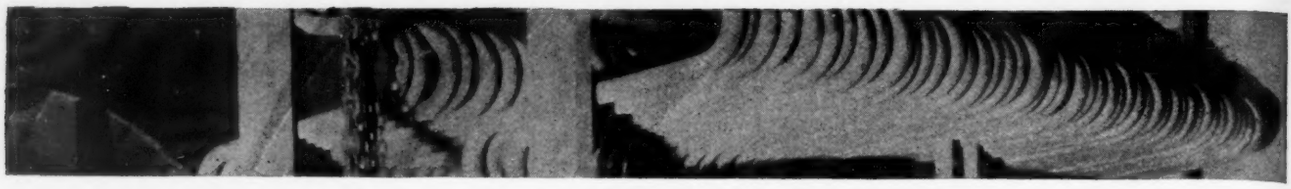
Birmingham	10.50 to 11.00
Boston	7.50 to 8.00
Buffalo	10.00 to 10.50
Chicago	10.50 to 11.00
Eastern Pa.	11.50 to 12.00
New York	6.25 to 6.75
St. Louis	10.50 to 11.00

LOCOMOTIVE TIRES

Chicago, cut	11.00 to 11.50
St. L., No. 1	9.00 to 9.50

LOW PHOS. PUNCHINGS

Chicago	11.00 to 11.50
Buffalo	12.50 to 13.00
Eastern Pa.	13.00 to 14.00
Pittsburgh	13.50 to 14.00



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NATIONAL TUBE COMPANY · Pittsburgh, Pa.
Subsidiary of United States Steel Corporation

NATIONAL PIPE

ter consumer is buying lightly. Supplies with rerolling mills are heavier following a recent buying flurry in rails for rerolling at weak prices.

New York—While steadier, scrap prices contnue weak. Mills are taking old material close to requirements. No. 1 melting steel is $8.50, delivered eastern Pennsylvania. Most material moving in this district is going to Buffalo by barge, $6.25 being paid for No. 1.

Buffalo — Inactivity again surrounds the scrap market with few materials moving except on orders. Unfilled orders for all grades of steel destined for local consumption are estimated at less than 10,000 tons. Prices are unchanged and fairly strong in view of decreasing receipts.

Philadelphia—Steel scrap is easy with No. 2 grade now $7, delivered, and a $9 price on No. 1 disappearing. A dealer is offering $6.50 for No. 2 steel for delivery in this district, but no actual purchase are reported .

Pittsburgh—Mill buying of iron and steel scrap involves limited tonnages and is resulting in narrow price ranges. Moderate sales of heavy melting steel have been made at $10.50 and in view of the fact that the top price paid recently was $10.75 this grade may be quoted 25 cents lower at $10.25 to $10.75. Compressed sheets are nominal at the same level. Buying of other grades also involves only small lots and prices generally are unchanged. Railroad steel specialties are easier in a dull market, being off 50 cents at $11.50 to $12.

Detroit—Lack of buying has caused the market for open-hearth grades to sag and reductions of 25 cents have been made on heavy melting steel and compressed sheets. Busheling also is lower.

Cleveland — So few transactions have taken place in the principal grades of iron and steel scrap in the past week that quotations remain unchanged. Consumers continue to hold up shipments of heavy material as their open-hearth operations continue at minimum. Hence prices continue to be regarded as largely nominal.

Cincinnati—Dealers in iron and steel scrap are buying with caution, chiefly in small lots to cover contracts, at least until improvement in mill demand develops. Prices remain unchanged but nominal.

St. Louis—Purchasing of iron and steel scrap by melters is confined to a few scattering lots for prompt shipment. Prices remain stationary and, in the case of most items, largely nominal. Sales have not been of sufficient size to give an actual test. All steel grades continue weak.

Railroad offerings are smaller than heretofore, particularly in the case of western trunk lines with St. Louis terminals. The carriers, however, are shipping promptly such material as they sell.

Birmingham, Ala.—Heavy melting steel holds at $8.50 for best quality. All prices are weak.

Toronto, Ont.—Steel scrap is practically at a standstill and iron grades alone show life. Heavy melting steel and turnings are stagnant in both the Toronto and Montreal districts. No. 1 machinery cast has some call, stove plate and malleable scrap are spotty and other lines dull. Dealers are out of the market and refuse to add to stocks. Prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Soviet Urges Credits

New York—Returning from Russia, Peter A. Bogdanov, director of the Amtorg Trading Corp., buying agency in this country for the Russian government, states that purchases will continue to decline unless more favorable credits are extended. He suggests a $100,000,000 revolving fund, either private or governmental, to finance Russian purchases here. Russian purchases here in the eight months ended with August totaled $48,500,000; in the same period last year $88,400,000.

Schwartz To Address P.A.'s

Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel Inc., New York, will address the Rhode Island Purchasing Agents' association at Providence, Nov. 23.

Coke

Foundry Fuel Shipments Increase Slightly—Furnaces Out of Market—Prices Maintained

COKE PRICES, PAGE 70

Pittsburgh — Prepared domestic beehive coke gradually is improving in demand, while the furnace and foundry grades continue quiet. Shipments of foundry coke have increased only slightly during the past 30 days, the gain being considerably less than seasonal. Blast furnaces are out of the market for new contracts, and requirements of water gas producers are slow to expand. Prices are fairly steady at $2.40 for standard furnace coke, and $3.25 to $4.50 for the foundry grade.

New York—Beehive metallurgical coke specifications are coming out slowly, with prices unchanged at $2 to $2.25, Connellsville, Pa., for furnace fuel, and $3 to $3.25, Connellsville, for the common grades of foundry coke. The premium brands of foundry coke are $4.50, Latrobe, Pa. By-product coke is $8.70 to $9.10, Newark, N. J.; $10.50, New England; and $8.75, Philadelphia.

Cincinnati—Ordering of by-product foundry coke so far in October has failed to disclose the trend for the fourth quarter. Specifications have been light and close to immediate needs. Quotations for October remain at $9, delivered Cincinnati.

Birmingham, Ala.—Little more than half the coke ovens in this district are in operation and many of these are on slow schedule. Some shipments are being made to the Middle West. Cooler weather here has increased domestic fuel requirements. Prices are steady.

Railroads Spending Billion

Railroads this year will spend almost a billion dollars for purchases despite their retrenchment, according to the New York investment house of Wood, Struthers & Co. Purchases of iron and steel for 1931 are estimated at $329,700,000. In 1930 the railroads spent $1,038,500,000.

Pacific Coast

Unusually Large Crane Order Placed by Navy—Airship Dock Bids Create Much Interest—General Construction Inactive Except for Public Works—Prices Show Little Change

Seattle—Interest of the steel trade this week centered on opening of bids at Washington, for construction of the navy department's airship dock at Sunnyvale, Calif. Low bidder for subdivision 1, involving 8000 tons of steel, was Wallace Bridge & Structural Steel Co., Seattle, which received the award.

The bid which was submitted by Wallace, $1,116,044, combined with subdivision 2, Siems-Helmers Inc., St. Paul, $398,937, is about $131,000 lower than the figure submitted by the Mt. Vernon Bridge Co., Mt. Vernon, O., for construction of the dock exclusive of foundations. This contract involves the largest amount of steel on which any plant in this territory has bid this year.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Moore Drydock Co., Oakland, was second on the first subdivision at $1,190,000, followed by the Mt. Vernon Bridge Co., $1,236,000. The latter company was low bidder at $1,646,000 for the entire dock superstructure exclusive of foundations.

Pacific Northwest building construction continues inactive, particularly industrial, store and apartment house projects. Residence building is more pronounced. Public works still predominate as officials are forwarding projects as much as possible to relieve conditions during the winter. Idaho announces that $900,000 will be expended on highway jobs during the fall and winter.

Bars, Plates and Shapes

Inquiry for merchant bars and reinforcing materials is slow, no large tonnages pending. State highway jobs, one involving several concrete bridges, bids Oct. 13, call for an unstated tonnage of concrete bars. The trade is adversely affected by lack of building activity.

Aside from the state's annual requirements for approximately 300 tons of steel for automobile licenses, there is little inquiry for plates.

Several structural awards were announced this week. Isaacson Iron Works, Seattle, has booked 100 tons for the laundry at the state Medical Lake hospital, 100 tons for the Hoquiam postoffice and 400 tons for a number of miscellaneous projects. The same plant is also fabricating 225 tons for the addition to the state penitentiary at Walla Walla, previously reported as 200 tons. Star Iron & Steel Works, Tacoma, has the contract for a 5-ton, 36-foot span gantry crane, 61 tons of shapes, for the Ford assembly plant, Seattle. This crane is for dock operation. Hofius Steel & Equipment Co., Seattle, for the second time was low bidder for furnishing approximately 100 tons for the framework of two shop buildings and a crane for McNeil Island federal prison, Washington.

Information from the Puget Sound Navy yard announces award of crane jobs, involving a total of about 1500 tons of steel, as follows: 250-ton crane to Dravo Contracting Co., Pittsburgh; at $479,000; 20-ton crane to R. W. Kaltenbach Corp., Bedford, O., at $65,000; 10-ton crane to Star Iron & Steel Co., Tacoma, at $53,400. Bids were opened June 17 and early in July (STEEL, July 9) it was reported that the three contracts had been awarded to the Lakeside Bridge & Steel Co.

Finished Materials Dull

The wholesale jobbing trade hopes for improvement in conditions as prices are so low that volume is of no consequence. There is a movement to stabilize the situation. Meantime sales are confined to small tonnages for immediate requirements. The usual fall activity is lacking. A shipment of 400 tons of foreign steel was delivered here this week.

Hofius Steel & Equipment Co., Seattle, has the contract to furnish 855 tons of 75-pound relay steel rails for a tramway extension on the south jetty of the Columbia river for which the general contract is held by the Columbia Contract Co., Portland. Tramway connection for hauling materials to the job will be made with the Spokane, Portland & Seattle railroad.

Seattle has contracted for a three months' supply of gray iron castings on a basis of 3¾c per pound and $9 per ton for scrap. Bureau of supplies is in the market for two motor driven engine lathes, bids Sept. 29.

West Surpasses East Except in Manufacturing

Appraising principal economic factors of the United States on a per capita basis, that part of the country west of the Mississippi river surpasses that east of the river in all but value of manufactured products, states the National Industrial Conference board, New York.

Of the total land area of the United States, 71.2 per cent lies west of the Mississippi river but this area has only 30.4 per cent of the total population. However, with only 30 per cent of the total population, the west has nearly 32 per cent of the total national wealth.

On the basis of 1929 government figures, the West accounted for 51.1 per cent of the total value of $9,498,000,000 of farm crops; 53.3 per cent of the total of $6,500,000,000 of animal products; 48.3 per cent of the value of mining products, but only 19.5 per cent of the $70,000,000,000 of the products of manufacturing.

Hardware Exports Off 42 Per Cent in First Half

United States export trade in hardware and allied products declined from $31,489,270 in value during the first half of 1930 to $18,305,582 worth in the corresponding period of 1931—a drop of $13,305,582 in value, or 42 per cent, states the bureau of foreign and domestic commerce, Washington.

The world-wide depression and the continuing slackening of building activity is probably to be held chiefly responsible for this slump in trade. The trade of European competitors also has fallen, though in some instances not so much as the American exports.

In times of depression price is frequently the determining factor, and the American products included in these total figures have long stood for quality rather than cheapness in price, states the bureau. Thus when money is scarce in world markets, American hardware manufacturer is usually the first to suffer.

Class 1 railroad Aug. 22 had 573,352 surplus freight cars in good repair, 1132 less than on Aug. 14.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	58	44½	⅛	23	5
¼	62	50½	¼	28	11
⅜—3	64	52½	⅜—1¼	31	15
			1½—2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7—8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

⅛	55	44½	¼ & ⅜	+13	+48
¼	60	49½	½	23	7
⅜—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7—8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, Lap Welded Steel		f. o. b. Pittsburgh Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$33.00 to 35.00
Four-inch, Birmingham .... 37.00 to 39.00
Four-inch, Chicago ..... 43.00 to 46.00
Six to 24-inch, Chicago..... 40.00 to 43.00
Six-inch and over, N. Y..... 28.50 to 30.50
Four-inch, New York ..... 34.50 to 36.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	3.00c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.60c
Pittsburgh	2.60c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.60c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.10c-3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.40c
Los Ang. lcl.	2.70c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.60c
San Fran. cl.	2.30c
San Fran. lcl.	2.50c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St Paul	3.10c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.915c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	4.00c
Phila.*† (e)	3.05c
Pitts.**	2.60c to 2.85c
San Fran.	3.65c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.70c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.60c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†(e)	3.55c
Pitts.**	3.40c
Portland	4.50c
San Fran.	4.15c
Seattle	4.25c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	5.45c
Buffalo	4.10c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	4.00c
Detroit	4.00c
Houston	5.40c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*† (e)	4.00c
Pitts.**	4.00c
Portland	5.00c
San Fran.	4.65c
Seattle	4.75c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	5.10c

BANDS

Baltimore	3.50c
Boston	3.75c-4.25c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.90c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.45c

HOOPS

Baltimore	3.50c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.40c
Philadelphia*	3.40c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Clev. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more. (c) Plus mill, size and quantity extras. (d) Minus quant. diff. (e) New mill classif. ‡Domestic bars. *Plus quantity extras. **Less than 25 sheets. *†50 or more bundles.

ROLLING MILL EQUIPMENT
FOR
HOT OR COLD ROLLING

MILLS

MILL REELS

COILERS

SLITTERS

WINDING REELS

LEVELING MACHINES

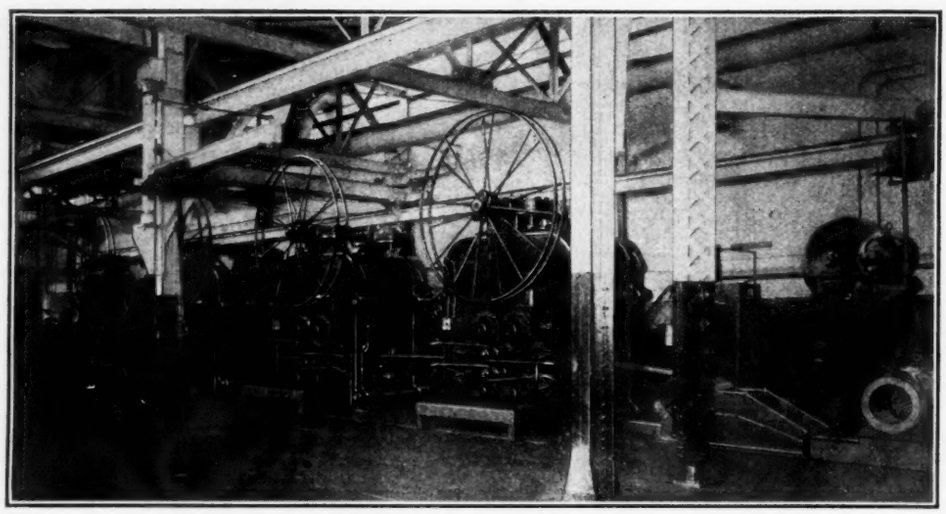
SHEARS

RECOILING MACHINES

SCRAP-BAILING MACHINES

ETC.

ETC.



BLISS CLUSTER MILLS
ROLLER-BEARING EQUIPPED

These mills are built in capacities ranging from 4″ to 72″ wide for hot or cold rolling.

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BLISS

No. 576

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 7.25c, Conn., for copper

Sheets	
Yellow brass (high)	13.00
Copper, hot rolled	16.12½
Lead, full sheets (cut ½c more)	8.25
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	16.25
Seamless copper	15.62½
Rods	
Yellow brass (high, full turnings)	11.25
Naval brass	12.37½
Anodes	
Copper, untrimmed	12.62½
Wire	
Yellow brass (high)	13.50

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	4.25 to 4.50
Chicago	3.75 to 4.00
Cleveland	4.50 to 4.75
St. Louis	4.00
Heavy Yellow Brass	
New York	2.75 to 3.00
Heavy Copper and Wire	
New York	5.25 to 5.50
Boston	4.75 to 5.00
Chicago	4.00 to 4.50
Cleveland	4.50 to 4.75
St. Louis	4.25 to 4.50
Composition Brass Borings	
New York	4.00 to 4.25
Yellow Brass Tubing	
Cleveland	2.75 to 3.00
Light Copper	
New York	4.25 to 4.50
Chicago	3.75 to 4.00
Cleveland	4.00 to 4.25
St. Louis	4.00
Light Brass	
Boston	2.50 to 2.75
Chicago	2.25 to 2.50
Cleveland	1.75 to 2.00
St. Louis	2.25
Zinc	
New York	1.25 to 1.50
Cleveland	1.25 to 1.50
St. Louis	1.50
Aluminum	
Clippings, soft, Cleveland	12.50 to 13.00
Clippings, hard, Cleveland	9.00 to 10.00
Borings, Cleveland	3.50 to 4.50
Mixed cast, Cleveland	4.00 to 4.50
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	4.00

Secondary Metals

Remelt aluminum No. 12'	8.50 to 9.50
Brass ingots, 85-5-5-5	7.37½

Metals

Activity Restricted Because of Unsettled World Affairs—Copper Holds—Tin Eases

New York—Activity in the nonferrous metals was light during the past week. This reflected unsettled conditions in world finance and the acute weakness on security and commodity exchanges. Trading in tin, particularly, was restricted because of the fluctuations in sterling exchange.

Copper and lead prices held unchanged during the week. Tin fell to new lows for the reaction. Zinc eased off slightly. Silver was more active but quoted below highs reached recently. Continued disturbances in China have been a strengthening factor in antimony.

Copper—Tone of the copper market is improved due to the coming conference of world copper producers here late this month. The conference will mark the first attempt since last June to put the supply of copper in line with demand. The trade anticipates little further increase will be revealed in the huge stocks overhanging the market by September statistics. The domestic situation has shown little change in the past several days. Electrolytic metal remains at 7.00c, Connecticut, with consumers displaying little interest. Producers still are out of the market. Export sales continue fair on the basis of 7.50c, c.i.f. European ports.

Tin—Trading is exceptionally light due to the fact that consumers are unwilling to place commitments until the market shows a greater degree of stability. Prices show a continued downtrend with the current level approximately 5 cents a pound under a month ago. World visible supplies of tin declined 265 tons in September to 50,772 tons, but remained nearly 10,000 tons above a year ago. Tin shipments to the United States last month totaled 250 tons of Chinese and 16 tons of Banca.

Lead—A firm situation continues in lead, although business recently has been confined to carlots. Some pickup in demand, however, is anticipated this month since consumers are not so well covered as in the past several weeks. No specifying is reported as yet for November delivery. World lead output averaged 3804 tons daily in August, against 3691 tons in July but was well below the average of 4277 tons for the first eight months of this year. Further plans for curtailment of output keep the market in a statistically strong position.

Zinc—Further easiness has occurred in zinc with prices now approaching the lows reached earlier this year. This easiness has resulted because of pressure by sales interests. Galvanizers and other zinc users, however, have shown little interest in the market. Sales last week average approximately 500 tons under that for the past month.

Antimony—Prices continue firm since offerings from China are restricted. Domestic stocks are 50 per cent under a year ago.

Silver—Demand is in fair volume but the metal currently is quoted somewhat under the 31-cent level reached a few days ago. A movement to remonetize the metal has had a strengthening effect.

Aluminum — Quotations remain unchanged and fairly steady but business remains in light volume.

Places Wire Mesh

For Ohio state highway department's project No. 344, Frowine Bros., Portsmouth, O., general contractors, have placed 52,752 square yards of Type "A" wire mesh fabric with the Wheeling Corrugating Co., Wheeling, W. Va. Involved in the same project is 4.38 miles of steel center joist-center dowel bars, each 5 feet in length, which were placed with the Ben-Tom Supply Co., Columbus, O., specifying a Truscon Steel Co., Youngstown, O., product.

Interstate Metal Products Co., Chicago, has changed its name to Kedzie Metal Products. Co.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
September 29	7.00	7.37½	6.87½	22.50	22.75	4.40	4.22½	3.65	22.90	6.55	35.00
September 30	7.00	7.37½	6.87½	22.37½	22.62½	4.40	4.22½	3.65	22.90	6.55	35.00
October 1	7.00	7.37½	6.87½	22.12½	22.50	4.40	4.22½	3.62½	22.90	6.55	35.00
October 2	7.00	7.37½	6.87½	22.37½	22.75	4.40	4.22½	3.60	22.90	6.55	35.00

Europe

British Prices Moving Up, Markets More Active—French Makers Readjusting Prices

London—(*By Cable*)—British markets show a change for the better, following the suspension of the gold standard. Heavy buying of pig iron is reported in the Midlands; this including contracts to the end of the year. East Coast hematite is up 5 shillings. Activity in the fuel market and a rising price trend are features. In one week galvanized sheet prices have snapped out of lethargy, with a substantial increase in prices. The position of the tin platemakers is improving, with a rise in price of 2 shillings. Finished steel so far is unaffected by the revival in other lines, but sentiment is better.

STEEL's correspondent at Paris reports business is more or less in a state of suspension while new prices are being determined. In Belgium only sales for domestic purposes are noted. Little prospect of an early stabilization of prices is seen in Germany.

British Steelmakers Hold Prices at Old Level

Birmingham, Eng.—Special significance was atached to the meeting of the Steel Manufacturers' association in London this week as this was not actually due until October. Naturally speculation was rife as to the effect on prices but excitement collapsed when it was announced that the association had decided to continue on the old basis.

Some arrangement is being made with the shipbuilders to give a special advantage in buying British steel but details have not yet been decided on. No actual reduction in the price of steel could be expected without involving a loss to producers and it is agreed on all sides that such a step would not only be folly from the manufacturers' point of view but it would be unreasonable to expect any accession of business.

Steelworks in the Midlands are receiving small specifications. Contractors have asked for deliveries to be delayed, presumably because of uncertainty of the political situation.

Many comments are being made on the subject of tariffs and there is no question that some sort of import duty has been brought appreciably nearer in the first few hours of the coalition government. Its effect on the purchase of Continental materials is difficult to gage but business among Midland merchants has not been stimulated. Prices are weak and there are numerous opportunities of making bargains owing to the low prices adopted by French and Belgian manufacturers. Germany is still off the market as far as semis are concerned.

Against this evidence from Birmingham importers is the cry of the Staffordshire ironmaster that most of his trade is being filched by the Continental maker. Deliveries are moderately heavy and Continental strip costs something like half the price of that made in South Staffordshire. Best iron strip of recognized quality costs £10 12s 6d ($51.63), delivered, although in some cases an inferior quality may be had for £10 7s 6d. ($50.41).

Pig Iron Situation Heavy

In the Midland pig iron position nothing indicates quickening of demand. Foundries are taking small quantities for immediate consumption but they cannot plan for deliveries ahead owing to the uncertainty of their own position. In the Barrow-in-Furness district inquiries promise considerable buying in the late fall. Makers have been steadily reducing stocks but there is a heavy tonnage of metal still stored in works yards.

On the northeast coast makers report that stocks of foundry iron are being reduced and are now about 10,000 tons below January. There is no prospect of increase in production and the situation is complicated by considerable deliveries of Midland pig iron. Export demand is light and ironmasters are prevented from doing any extensive business on the Continent owing to the lower prices of French and Belgian makers. Hematite producers hope to stabilize prices at £3 ($14.58) a ton for east coast mixed numbers but huge stocks cause weakness.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Oct. 1 (a)	British gross tons U. K. ports		Continental metric tons Channel or North Sea ports	
Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)				
PIG IRON				
Foundry, 2.50-3.00 Silicon	$11.70	2 18 6	$9.40 to $9.60	2 7 0 to 2 8 0
Basic bessemer	12.00	3 0 0*	9 00 to 9.20	2 5 0 to 2 6 0
Hematite, Phos. .03-.05	13.00	3 5 0	.....	.....
SEMIFINISHED STEEL				
Billets	$20.50	5 2 6	$11.00 to $11.20	2 15 0 to 2 16 0
Wire rods, No. 5 gage	34.00	8 10 0	20.00	5 0 0
FINISHED STEEL				
Standard rails	$33.00	8 5 0	$26.00	6 10 0
Merchant bars	1.25c	7 0 0	.56c to .58c	3 2 0 to 3 3 0
Structural shapes	1.39c	7 15 0	.54c to .55c	3 0 0 to 3 1 0
Plates, †¼-in. or 5mm.	1.48c	8 5 0	.68c to .69c	3 15 0 to 3 16 0
Sheets, black, 24 gage or 0.5mm.	1.57c	8 15 0	.47c to .50c	2 12 6 to 2 15 0
Sheets, gal., 24 gage, corr.	1.75c	9 15 0	1.60c to 1.62c	8 17 6 to 9 0 0
Bands and strips	1.70c	9 10 0	.72c to .74c	4 0 0 to 4 2 6
Plain wire, base	1.52c	8 10 0	.91c	5 1 3
Galvanized wire, base	1.97c	11 0 0	1.11c	6 3 9
Wire nails, base	1.97c	11 0 0	.92c	5 2 6
Tin plate, box 108 lbs.	$ 3.10	0 15 6	$2.62	0 13 2‡

British ferromanganese £17 9s 6d ($69.90) delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($36.00) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

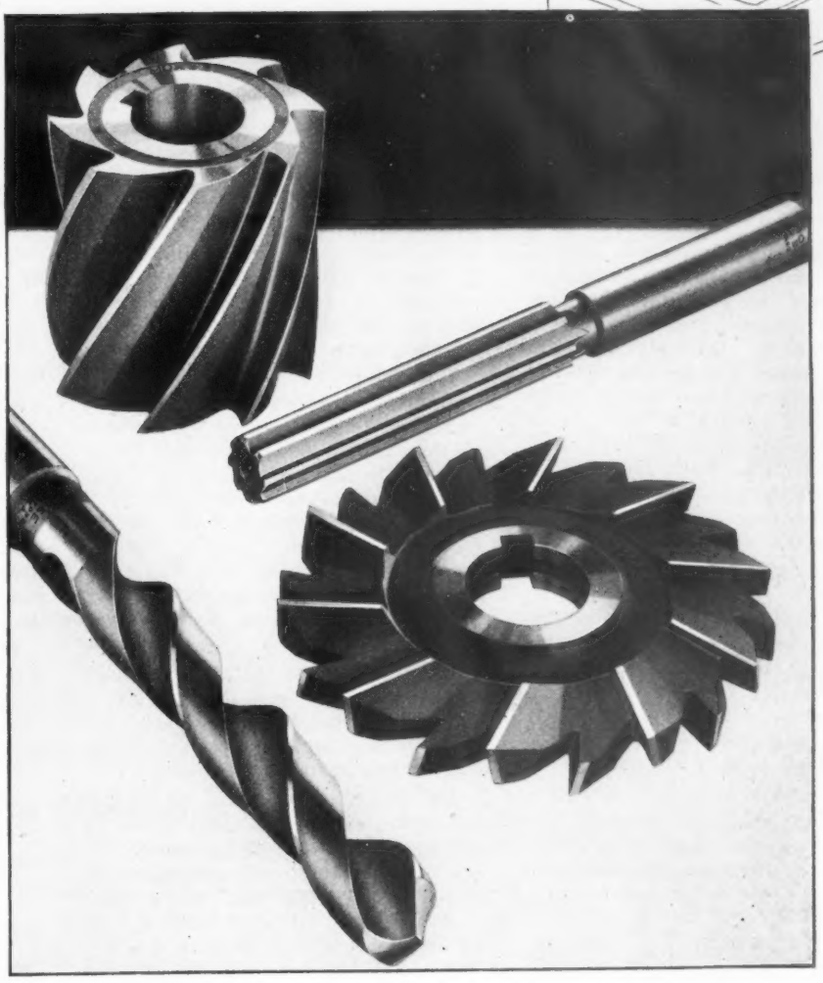
	£ s d		French Francs		Belgian Francs		Renten Marks
Fdy. pig iron, Si. 2.5	$11.70	2 18 6	$11.06	280(2)	$12.88	460	$18.53	78
Basic bessemer pig iron	12.00	3 0 0*	10.27	260(1)	11.62	415	20.31	85.50
Furnace coke	2.20	0 11 0	5.73	145	5.18	185	5.08	21.40
Billets	20.00	5 0 0	16.59	420	17.50	625	26.25	110.50
Standard rails	1.48c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.25c	7 0 0	.90c	500	.77c	590	1.38c	128
Structural shapes	1.57c	8 15 0	.99c	550	.76c	585	1.35c	125
Plates, †¼-in. or 5mm.	1.61c	9 0 0	1.26c	700	.92c	705	1.59c	147
Sheets, black, 24 ga. or 0.5mm.	1.57c	8 15 0	2.09c	1,160	1.82c	1,400	1.26c	117
Sheets, galv., corr., 24 ga. or 0.5mm	1.61c	9 0 0	2.39c	1,325	2.47c	1,900	3.56c	330
Plain wire	1.52c	8 10 0	1.68c	935	2.08c	1,600	2.24c	207
Bands and strips	1.70c	9 10 0	1.13c	625	.78c	600	1.60c	148

*Basic. †British ship-plates, Continental bridge plates. ‡German.

British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

(a) This week the lower exchange rate for sterling is used in computing British prices, depressing them abnormally. It is suggested in the cable from London that British producers will advance their quotations to neutralize this artificial decline in their prices.

Both of You *are looking for the same thing*



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Machinery

OCTOBER has started with a mild upswing of machine tool inquiry in the Chicago district, accompanied by at least one fairly good order. With orders everywhere few and scattered, government lists continue to be noticeable sources of business. Builders who participated in the two or three substantial orders lately released by automotive interests, rapidly are cleaning up their respective shares of this business. Belief is prevalent that these few installations of up-to-the-minute production equipment will force similar installations in a number of competitive plants within a short time. Some pressure on prices is reported.

New York—Machine tool buying and inquiry both continue light. A few dealers and builders report September volume about equal to the previous month. Government activity has slumped and several lists on which bids were taken many weeks ago, still remain unplaced. Most plants are operating on curtailed schedules, the few exceptions being those builders who participated in recent fairly substantial orders placed by automotive interests.

A New England builder of textile machinery is just reported to have booked a large order from Japan, including looms for immediate delivery. This is resulting in an increase in his operating schedule, which is welcome after a dull period. Ball bearing plants continue to operate at an uneven rate, with automotive interests placing but little business.

Worcester, Mass. — October has begun with machine tool sales at the low rate which characterized September, and with only a few definite prospects in view.

The flurry of activity in grinding machinery, resulting from retooling in the automotive industry, appears to have subsided, although what orders and inquiries there are still come mainly from the Detroit district.

There have been some government awards, Reed-Prentice having received one covering two lathes for the Puget Sound navy yard and three for Mare Island. The list covering 17 lathes for the Brooklyn navy yard still is pending. These, and an occasional school order, represent practically all the life there is in the lathe market.

Pittsburgh—Recent improvement in inquiry for machinery has been slight and conditions indicate only quiet business for the immediate future. Orders continue to come in at the low volume of recent months and are still limited almost entirely to single tools.

Pending work represents a relatively small volume of business and, in view of the general hesitancy in buying, it is expected that action will be deferred for an indefinite period in many cases.

Cleveland—Machine tool builders who shared in recent substantial equipment orders placed by Chevrolet Motor Co. and by a few other automobile and parts makers, rapidly are cleaning up these orders.

While no equivalent business immediately is in view, belief is prevalent that competition soon will force installation of new types of high production machinery in many plants.

Some dealers and builders report that September was their lowest month since 1920. Others report slight gains over August. Sales efforts continue to be stimulated by new models and by new marketing plans.

Release of some items on important lists which have been held up for several months by some of the leading manufacturers of electrical equipment recently has caused quite a flurry of excitement among machine tool builders in this district. These lists hold great possibilities for Cleveland machine tool builders.

Chicago—More cheer in the outlook for early machine tool sales is given by a mild upturn in scattered inquiries. While none of these is sufficient to cause a stir in the market other than to provide dealers with something definite upon which to work, these inquiries at least represent something more substantial than recent feelers and casual negotiations. Most of the new inquiries cover single tools, although one order for drilling equipment and several other tools has just been placed in this district, the total of which is $18,000 to $20,000.

While it is indicated that companies manufacturing farm implements will resume more active operations late in October or early in November, little buying is expected from that source. One large tractor works in this territory announces a schedule of three days a week for an indefinite period. As dull business continues, buyers are pressing more and more urgently for lower prices, particularly on machine tool parts and accessories.

Demonstrations of Milling Are Held in Cleveland

Kearney & Trecker Corp., Milwaukee, in collaboration with the Motch & Merryweather Machinery Co., held in Cleveland, Sept. 23, 24 and 25, a private showing of its new line of milling machines. The machines were under power and demonstrations were made of high speed milling with tungsten carbide and tantalum carbide cutters.

Following the afternoon demonstrations on the first two days, design and construction were explained by Joseph B. Armitage, chief engineer, Kearney & Trecker Corp. A buffet supper then was served. The evening feature was a talk on tungsten carbide and tantalum carbide milling by Frank W. Curtis, research engineer, Kearney & Trecker Corp. His talk was supplemented by slides showing unusual tools and setups and by motion pictures showing production performance.

These demonstrations and talks were held at the plant and showrooms of the Motch & Merryweather Co., admission being by invitation. About 500 executives, engineers and production men from metalworking plants in Cleveland and vicinity attended.

Navy Announces Awards On Cranes for Puget Sound

Washington—Navy department has announced awards on bids covering three cranes for installation at the navy yard, Puget Sound, Wash. These bids were opened on June 3 and up to this time have been held up.

The successful bidder on the largest unit — an electrically operated stationary hammerhead crane of 250-ton capacity—is Dravo Contracting Co., Pittsburgh. This company bid $479,000. This is the largest crane ordered by the navy department since the war.

The other successful bidders were: R. W. Kaltenback Corp., Bedford, O., on a gasoline-electric powered traveling tower crane of 20 tons capacity, at $65,000; and Star Iron & Steel Co., Tacoma, Wash., on a gasoline-electric powered traveling crane of gantry type, at a price of $53,400.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

LAWRENCE, MASS. — Lawrence Braiding Machine Co., Inc., recently organized by L. M. Trilling, 61 Stearns avenue, will manufacture special machinery and parts. John Bolton is president.

SPRINGFIELD—Moore Drop Forge Co., 38 Walter street, has awarded a contract to A. J. Daniels, 661 Main street, Shrewsbury, Mass., for a 1-story machine shop, 80 x 150 feet.

New York

BROOKLYN—Marrin Mfg. & Supply Co. Inc., has been organized with $10,000 capital by William J. Marrin, 82 165th street, Jamaica, L. I., to manufacture tools, marine equipment, and mechanical specialties..

NEW YORK—Department of sanitation, city hall, proposes an expenditure of $200,000 for plant apparatus and marine equipment.

NEW YORK—Bernnart Engineering Corp. has been incorporated with $20,000 capital to carry on a construction and engineering business, by J. I. Shapiro, 51 Chambers street.

NUNDA—Nunda Process Corp. has been organized with $10,000 capital by Ward Van Gilder, to manufacture machines for cementing leather, and other special machinery.

SYRACUSE—Syracuse Machine Co. has been incorporated with $20,000 capital to conduct a general machine shop business, by Edward J. McNeill, Florence C. McNeill and James C. Tormey.

New Jersey

UNION CITY—New Jersey Automatic Coal Burner Corp. has been incorporated with 1000 shares common stock to manufacture fuel burners, by Maurice L. Wenzelberg, Union City.

Pennsylvania

BLAIRSVILLE—Duncan McDonald is arranging through the local chamber of commerce for facilities for the production of steam power units for motor trucks. Cost of plant is estimated at $90,000.

PHILADELPHIA—Bureau of supplies and accounts, navy department, Washington, will receive bids Oct. 13 on schedule 6625 for one set of motor-driven electric blower equipment.

PHILADELPHIA — City has given contract to L. Lombardi & Brother, 5115 Wakefield avenue, for construction of a city workshop and cell building at State road and Rhawn avenue, to cost $263,000.

Ohio

COLUMBUS—State department of public welfare, Ninth and Oak streets, will take bids until Oct. 16 for construction of a turbogenerator unit at the Ohio state penitentiary power plant. Plans are by the engineering division of the state department of finance, state house annex.

GIRARD — Pennsylvania railroad, Broad street station, Philadelphia, plans installing electric power equipment in its new engine house and terminal at Girard, at a total cost of $600,000.

TOLEDO—Alloy Foundry & Machine Co. has been incorporated with 500 shares no par value to operate a machine shop.

TOLEDO — Moto Meter Gauge & Equipment Co. is spending $1,000,000 in retooling its plant here for production of a new temperature gage.

TROY—City, G. L. Smith, service director, has let general contract to C. C. Carpenter for municipal light and power plant improvements. Froelich & Emery Engineering Co., Second National Bank building, Toledo, O., is engineer. Total cost is estimated at $75,000.

Michigan

DETROIT—MacKirdy Engine Mfg. Co., 317 Read building, Detroit, has been incorporated to build and deal in gas engines and motors, with 100,000 shares no par value, by Ray M. Shull, Walter E. Evans and John L. Hetzel.

DETROIT—Wayne Bolt & Nut Co. has been incorporated with $25,000 capital to manufacture bolts, nuts, rivets and other metal products, by Rex C. Jacobs, 6901 East Lafayette street, Alfred A. Amlinger and Clara S. Jacobs.

DETROIT—United Platers Inc., 994 Madison avenue, has been incorporated with $15,000 capital to operate a general plating and polishing business by Glenn Friedt, 756 Pemberton drive, Grosse Point; James C. Nankervis, Detroit; H. E. Adelsperger, Grosse Point.

DETROIT—Platers Inc., 3456 Denton avenue, has been incorporated with $15,000 capital to conduct a general plating and polishing business by H. E. Adelsperger Jr., 940 Westchester road, Grosse Point; J. C. Nankervis and Vincent B. Arnold, Detroit.

DETROIT—State Steel & Supply Co., 1901 East Kirby street, has been incorporated with 1000 shares, no par value, to conduct a general merchandising business in scrap, metals, machinery and tools by Harold Trunsky, 3224 Webb avenue, Charles N. Shere and William C. Haupt.

ECORSE—Murray Corp. of America plans to install electric power equipment in two additions to its metal stamping plant for automobile bodies. Total cost is estimated at $100,000.

MIDLAND—Dow Chemical Co. is in the market for heat treating furnaces, straightening mill and fabricating equipment for sheets up to 5 feet wide for a rolling mill plant to be built here to roll alloy sheets.

Indiana

HUNTINGBURG — City council is taking bids on an addition to the municipal power plant, including boiler, stoker and accessories. Charles Brossman, Chamber of Commerce building, Indianapolis, is engineer.

Illinois

AURORA—Chicago, Burlington & Quincy railroad, A. W. Newton chief engineer, 547 Jackson boulevard, Chicago, will rebuild its shops here, recently noted as damaged by fire. Cost is estimated at $350,000. (Noted Sept. 17).

CHICAGO—Central Gear Products Corp., 2124 Marshall boulevard, recently organized by C. C. Isaacson and W. E. Kane, will establish facilities for production of small gears and gearing systems.

CHICAGO—Dallas Brass & Copper Co., 820 Orleans street, has awarded the general contract to Dahl-Stedman Co., 11 South LaSalle street, for remodeling a 3-story and basement factory building into manufacturing quarters for an undisclosed tenant.

CHICAGO—Mechanical Plating Co., 1522 West Austin avenue, has been incorporated with $25,000 capital to carry on a business in plating with metals by Oscar Anderson, Signe Westerberg and George M. Westerberg. Austin E. Torney, 228 North LaSalle street, is correspondent.

EAST ST. LOUIS—Bids will be received Oct. 15 by the East Side levee and sanitary district, 217 Metropolitan building, East St. Louis, for a bridge with one 130-foot riveted through truss span and two 65-foot riveted approach spans. E. F. Harper, care the district address, is engineer.

GRANITE CITY—G. O. Eckstedt and associates, East St. Louis, Ill., have leased the building formerly occupied by the Howe Safety Appliance Co. and will start operations for the manufacture of gray iron castings. Brass castings may be produced also.

OAK PARK—Mid Continent Equip-

ment Corp., 600 North boulevard, has been incorporated with 12,000 no par shares by Poppenhuysen, Johnston, Thompson & Cole, attorneys, 11 South LaSalle street, to deal in machinery, appliances and tools.

Southern States

MONTGOMERY, ALA.—Bids received Aug. 24 for furnishing boiler plants at Maxwell field, here, have been rejected and new proposals have been asked for Oct. 12, at the office of the constructing quartermaster, Capt. M. A. McFadden.

WASHINGTON—Bureau of supplies and accounts, navy department will receive bids Oct. 13 on schedule 6611 for motor generator sets and on Oct. 20, schedule 6630, for four portable arc welding sets.

WILMINGTON, DEL.—Hydraulectric Control Corp. has been incorporated with 30,000 shares common stock, to manufacture electric and welding machinery, by Corporation Trust Co., Wilmington.

JACKSONVILLE, FLA.—Revolving Piston Corp. has been incorporated by L. W. Harvey, 3923 Springfield boulevard, to deal in mechanical devices.

ASHLAND, KY.—Kentucky & West Virginia Power Co. has awarded contract to Walter H. Cox for construction of a storage and service unit to cost $40,000.

LUDLOW, KY.—Construction of a waterworks plant is proposed, with pumps, softening plant and mains, to cost $120,000. Glazier & Morlidge, 305 Walnut street, Cincinnati, are engineers.

ALEXANDRIA, LA.—Cantrell's Garage, Robert Cantrell manager, has leased a plant at Fourth and Washington streets for a large repair shop and service station.

HAMMOND, LA.—Machine shop, boiler house and power units are included in the plans for a plant to be built by the Standard Tire and Rubber Co. George E. Knowles is plant manager.

SHREVEPORT, LA.—W. Murray Werner, Commercial Bank building, has been awarded contract by Captain George E. Lamb, constructing quartermaster, for four double and one single steel hangars and an assembly shop building at Barksdale Field.

BALTIMORE—General Aviation Mfg. Corp. will center manufacturing operations of its Passaic, N. J., Hasbrouck Heights, N. J., and Wheeling, W. Va., plants here. Plants formerly occupied by the Curtiss-Caproni Corp., at the municipal airport, is to be used. J. M. Schoonmaker Jr. is president.

HAGERSTOWN, MD.—Pangborn Corp., Crestline avenue, has closed bids for construction of a plant addition. Company manufactures sand blast and dust equipment.

NORFOLK, VA.—Hampton Roads Shipbuilding Co. Inc., H. B. Spear general manager, will repair machinery and reconstruct a warehouse unit, recently damaged by fire.

WELLSBURG, W. VA. — Dunham Wrench Co. has been incorporated by Charles L. Dunham to manufacture and deal in wrenches and other tools.

Missouri

ST. LOUIS—Norma Mfg. Co. Inc. has been organized by E. T. Rosenblum, 810 North Sixth street, to manufacture automobile and airplane carburetors.

ST. LOUIS—P-B Chain Mfg. Co. Inc. has been organized for the manufacture of tire chains for trucks by E. T. Rosenblum, 810 North Sixth street.

ST. LOUIS—Union Electric Light & Power Co.,Twelfth and Locust streets, will proceed with construction of a second 32,000-volt unit for the Osage hydroelectric plant. Estimated cost, $1,000,000.

Arkansas

LITTLE ROCK—Arkansas construction commission, 207 Marion hotel, Little Rock, Ark., will receive bids until Oct. 22 for a boiler house and heating facilities for the farm colony at the state hospital for nervous diseases, here.

Oklahoma

OKLAHOMA CITY—Nichols Mfg. Co., recently incorporated to manufacture an automobile wheel, rim and hub, advises that plans to build a plant for the manufacture of the product have been abandoned and production will be done under contract.

TULSA, OKLA.—Mid-Continent Electric & Machine Shop has leased space 20 x 70 feet at 211 South Elgin avenue for an armature shop. Vern Voight is owner and manager.

TULSA, OKLA.—Permanent Wave Machine Supply Co., G. E. Sanders, manager, has leased a plant at Second and Detroit avenues for manufacture of beauty shop specialties.

TULSA—Petroleum research bureau of chamber of commerce, J. B. Benson, chairman, is in contact with interests considering establishment of a diesel engine plant here.

Texas

AUSTIN—City council proposes to improve municipal power plant facilities. Two boilers of 900 horsepower capacity, each, will be installed. Total expenditure will be approximately $314,000.

CORSICANA, TEX.—Pumping station of Magnolia Pipe Line Co. has been partially destroyed by fire with loss of $50,000; two centrifugal pump units and auxiliary equipment were badly damaged. W. C. Ralston is superintendent.

GALVESTON—City board of commissioners is taking bids for erection of an administration building and hangar unit, the latter to be 80 x 100 feet. Arthur Peterson is commissioner of finance.

HOUSTON, TEX.—Southern Bolted Steel Tank Co. has been incorporated with $10,000 capital to manufacture tanks, by S. J. Krum, 4402 Greeley avenue.

Wisconsin

GRAFTON—Municipal council will receive bids until Oct. 16 for construction of a sewage disposal plant as part of a $75,000 project. Paul L. Clark, Appleton, Wis., is consulting engineer.

RACINE—Racine Stoker Mfg. Co. has been incorporated with 500 shares of no par value to manufacture coal-burning devices, by Herbert M. Nelson Jr., Clifton O. Strom and William H. Armstrong.

SPARTA—A. L. Nicol, clerk, Monroe county, will supervise construction of a machine shop to be built at a cost of about $25,000.

Minnesota

DETROIT LAKES—E. J. Bestwick, city clerk, advises that plans are being prepared by the city engineer for installation of two or three additional pumps at the city water station. Work is planned for this fall. (Noted Sept. 17).

North Dakota

WAHPETON—Roundhouse of the Northern Pacific railway, St. Paul, recently was virtually destroyed by fire.

Iowa

LENOX—L. B. Carruthers, city clerk, will receive bids Oct. 6 for a municipal light plant, 38 x 52 feet, in which will be installed two diesel engines, each with capacity of 500 horsepower. Cost is estimated at $85,000.

WALNUT—City will receive bids Oct. 6 for a vertical multi-cylinder diesel engine generator, two-phase, 60 cycles, 2400 volts.

Colorado

GRAND VALLEY—Bureau of reclamation, Denver, will receive bids Oct. 20 for electrical equipment for the Grand Valley project, to include two 2300-horsepower vertical hydraulic turbines, two 1875 kilovolt-ampere alternating current generators, auxiliaries and accessories.

THIS is one of the most highly developed heat treating departments in industry—the Hardening Department in the Goddard & Goddard Company plant at Detroit, devoted entirely to the manufacture of precision cutting tools.

At the right are three gas-fired two stage S C & H furnaces, lower chambers of which are used for high heat, and upper chambers for pre-heating, using spent gases from the high heat chambers. Wilson-Maeulen automatic electric control units shown are connected with regulating valves of each furnace. Oil in the tanks is circulated over cooling coils in the basement to maintain a uniform temperature of the quench. It is of interest to note that interior of this room is painted black, louvres at windows allowing adequate ventilation but no direct daylight—the object being to maintain uniform visibility for the work.

Meeting demands of such customers is sufficient proof of *Strong, Carlisle & Hammond* Engineers' ability to fulfill the requirements of any plant for industrial furnace equipment from design to installation. Ask our engineers to call. The Strong, Carlisle & Hammond Company, 1382 W. Third Street, Cleveland, Ohio.

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2832 EAST GRAND BLVD. - - DETROIT, MICH.
11 S. DESPLAINES STREET - - CHICAGO, ILL.
335 FIFTH AVE. - - - PITTSBURGH, PA.
30 CHURCH STREET - - - NEW YORK, N.Y.

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MANUFACTURERS OF ELECTRIC, OIL AND GAS INDUSTRIAL FURNACES

Montana

LEWISTON—Milton R. Wise, Lewiston, is assembling data for capitalists interested in establishing a steel plant to supply the Northwest. Ore and fuel sources are being investigated, as well as markets for finished steel.

Pacific Coast

BAY POINT, CALIF.—Congoleum-Nairn Inc., 195 Belgrave Drive, Kearney, N. J., plans to install electric power, including boiler house, in its new plant here, at total cost of $1,000,000. Sanderson & Porter, 1 Montgomery street, San Francisco, are engineers.

LINDEN, CALIF. — Linden irrigation district will build a pumping station in connection with an irrigation project. F. H. Tibbetts, Alaska Commercial building, San Francisco, is engineer.

MARE ISLAND, CALIF.—Bureau of supplies and accounts, navy department, Washington, will receive bids Oct. 20 on schedule 6637 for one electric aging oven.

SAN JOSE, CALIF.—Santa Clara Valley water conservation district proposes to build a power plant and three pumping stations. F. H. Tibbetts, Alaska Commercial building, San Francisco, is engineer.

Dominion of Canada

WINNIPEG, MAN.—A sewage disposal plant and intercepting sewer program to cost $15,000,000 is planned and financial aid of the dominion government is to be asked. L. F. Borrowman, alderman, is chairman of the special commission in charge of plans.

BELLEVILLE, ONT.—Clark Metals Ltd., affiliated with Bassick Mfg. Co., Bridgeport, Conn., is establishing production in a local plant, principal equipment to be moved here from Listowell, Ont. Company will produce castors, hardware, furniture and automobile parts. Ted Clark Jr. is superintendent of production.

FORT ERIE, ONT.—A proposed new traffic artery involves a steel viaduct over the Michigan Central and Canadian National railroad tracks at Central avenue, estimated to cost $135,000.

FT. WILLIAM, ONT.—An election will be held Oct. 17 on a proposal to allow the Hamilton By-Products Coke Ovens Ltd., 15 Main street e., Hamilton, Ont., to erect a gas plant.

NEW HAMBURG, ONT.—Erection of a waterworks and sewage disposal plant is being considered here. D. E. Ritz is village clerk. Cost is estimated at $125,000.

ST. CATHERINES, ONT.—Local plant of General Motors Corp. of Canada will be expanded and five additional units built, for the manufacture of steering gears, shock absorbers, ignition coils, spark plugs and axle shafts.

ST. JOHNS, QUE.—Erection of an industrial school has been proposed. O. Bessette is city engineer.

New Trade Publications

AIR COMPRESSORS—Quincy Compressor Co., Quincy, Ill., in Bulletin 10A describes its new compressor unit, automatic, two-stage, air-cooled. The compressor is illustrated and described and a table of dimensions is given.

ARC WELDERS—General Electric Co., Schenectady, N. Y., has issued a bulletin on the characteristics of its new arc welders of several types, discussing voltage recovery and arc stability.

MECHANICAL RUBBER—Diamond Rubber Co. Inc., Akron, O., has issued a catalog of its mechanical rubber products, including car washing hose, rotary drillers' hose and packing.

PROTECTIVE COATINGS — American Rolling Mill Co., Middletown, O., in a current engineering bulletin gives information as to the protective coatings used on its spiral welded pipe, their selection and probable life.

CARBURIZING — Carbonal process for carburizing steels is the subject of a bulletin, No. 931, published by the Hevi-Duty Electric Co., Milwaukee. It describes the results and advantages of the carbonal process of carburizing in the electric vertical carburizing furnace.

COLLAPSING TAPS—A booklet has been issued by the Geometric Tool Co., New Haven, Conn., on its class S collapsing taps. Illustrations show a variety of unusual applications of this device. A table of specifications is included.

LUBRICATION—In the current number of its publication on lubrication the Texas Co., New York, discusses the development and relative value of the emulsion and demulsibility tests and also the adjustment and alignment of bearings in their relation to lubrication.

TRAMRAIL—Various applications of its materials handling equipment are illustrated in a current bulletin by the Cleveland Electric Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O.

PYROMETERS—Accuracy of operation and ruggedness in service of the potentiometer pyrometer are stressed in a booklet by the Brown Instrument Co., Philadelphia. Features of the device are illustrated and described in attractive way.

WELDING — Welding Engineering Co., 2872 North Forty-first street, Milwaukee, is distributing a catlog cover, with pages 1 to 4, which will be followed by others in series, covering the equipment and supplies it provides for use in the welding industry.

WROUGHT STEEL WHEELS—A booklet has been issued by the Carnegie Steel Co., Pittsburgh, covering its rim-toughened wrought steel wheels. These wheels have been developed to meet increasing demands from railroad service with heavier loads and increased braking. Illustrations supplement the text.

VALVES—Schutte & Koerting Co., Philadelphia, offers in a current leaflet a list of bulletins dealing with various classifications of valves for lines carrying steam, air, gases, water, oil and chemical liquids in power plants and industrial processes. Valve users can find in these an answer to many valve needs.

WELDING—A continuation of its application sheet No. 23, series 2, on design of bases has been issued by the Lincoln Electric Co., Cleveland. This is devoted to consideration of bases where the elevation of one unit is greater than of the other. Diagrams and description of procedure cover the subject.

BOILERS—A new type of boiler offering unusual steaming capacity for its low headroom and floor space is the subject of a bulletin by the Babcock & Wilcox Co., 85 Liberty street, New York. It contains descriptions of the boilers and setting plans, with illustrations of typical installations in diversified industries. Complete construction details are given.

ELECTRIC TRUCKS — How its electric trucks can be modified to meet particular needs of various industrial situations is the theme of a booklet by the Elwell-Parker Electric Co., Cleveland. Illustrations show various applications of electric trucks designed for special handling jobs. The booklet is designed to give hints to manufacturing executives relative to handling materials and to engineers interested in plant layout.

CARBON-PILE RESISTORS—Bulletin No. 27 has been issued by the Baldwin-Southwark Corp., Philadelphia, to present the advantages of a group of testing and measuring devices based on the use of carbon-pile resistors for the measurement of small motions. A technical discussion is presented of the adaptations and the limitations of this type of resistor. Illustrations show the type of record available when the telemeter is used in conjunction with an oscillograph for associated use in recording variation of strain (or stress), of motion or vibration.